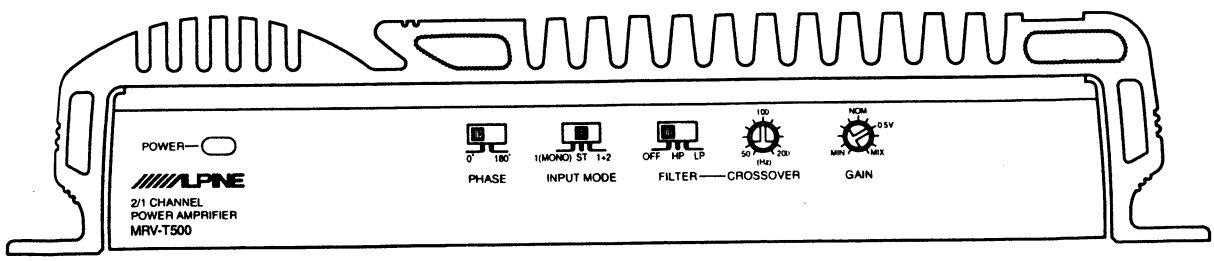
ALPINE®

SERVICE MANUAL

2/1 Channel Power Amplifier

- **The model described in this manual is developed from Model MRV-T300. For information that is not mentioned in this service manual, refer to the Service Manual • MRV-T300 (68E21806S01).** 161
- 当モデルはMRV-T300がベースモデルとなっております。このマニュアルは相違点のみ記載しておりますので、詳細については、サービスマニュアル・MRV-T300 (68E21806S01)を参照願います。



サービス費用区分	B
技術資料 No.	PM-56O

MRV-T500

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Refer to the Service Manual • MRV-T300 (68E21806S01).
MRV-T300 (68E21806S01)を参照願います。

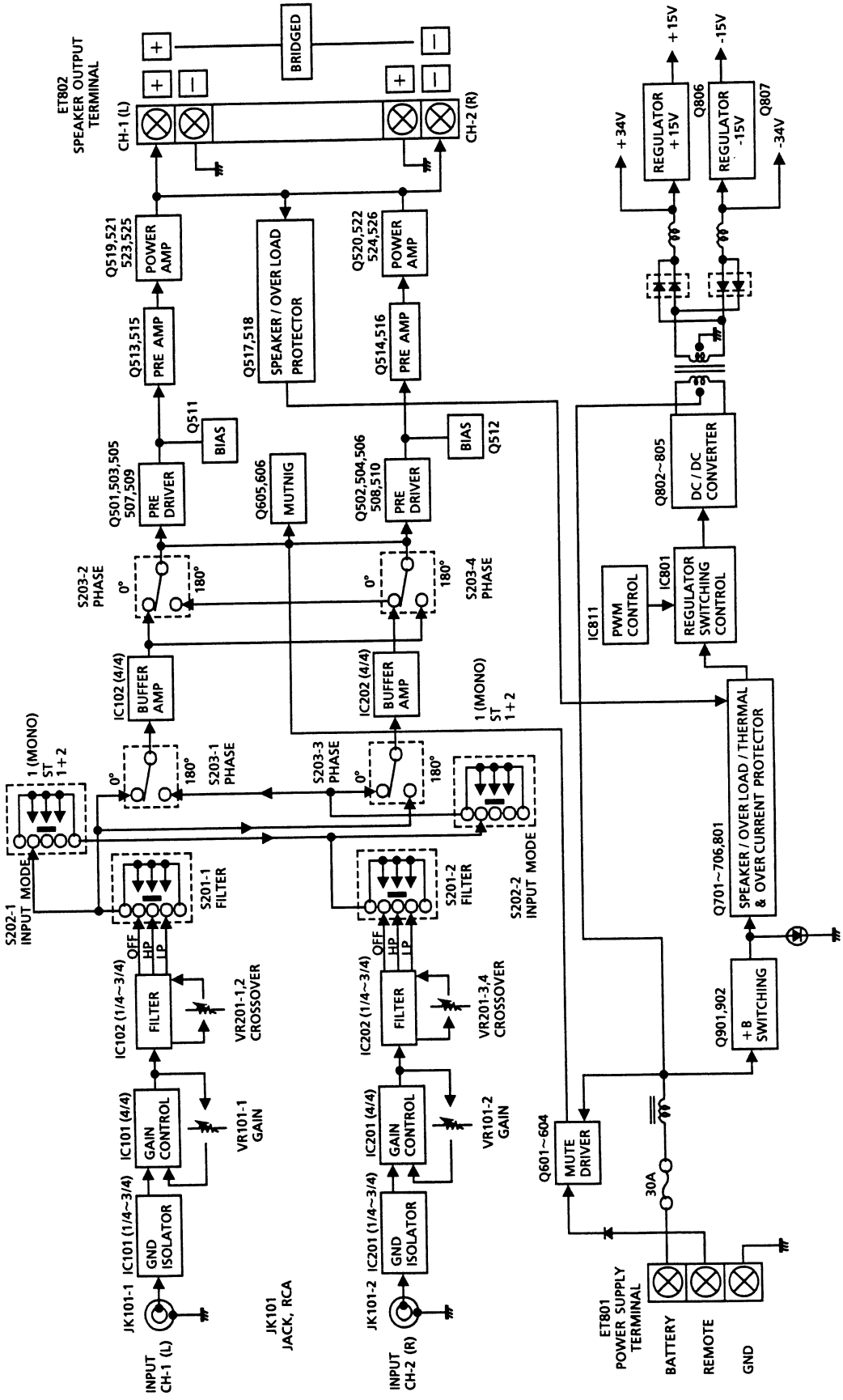
Additional Schematic Diagram inserted.

Specifications

Power Output (20Hz~20kHz)	4ohm-2channel, 0.08% T.H.D. : 85W
	4ohm-2channel, 0.08% T.H.D.,12V : 60W
	2ohm-2channel, 0.8% T.H.D. : 130W
	2ohm-2channel, 0.8% T.H.D., 12V : 85W
	4ohm-1channel, BTL, 0.8% T.H.D.,MONO : 230W
	4ohm-1channel, BTL, 0.8% T.H.D.,MONO, 12V : 190W
S / N Ratio (50W / ch / 4ohm, Output, Input shorted)	95dB
Input Sensitivity (100W / ch Output, GAIN Normal)	1V±3dB
Input Impedance (RCA Input)	10kohm±5%
Frequency Response (0±1dB, at 1kHz)	20Hz~40kHz
Current Drain	No Signal : 2A
	4ohm-2channel, 0.8% T.H.D. : 30A
	2ohm-2channel, 0.8% T.H.D. : 50A
	4ohm-1channel, BTL, 250W / ch Output : 45A
Residual Noise (4ohm-2channel, Input shorted)	3mA
Channel Separation (Input Shorted, at 1kHz)	55dB
Fuse Requirement	30A (For Battery Line)
Power Source	DC14.4V (11~16V)
Semiconductors	6 IC's, 43 Transistors, 13 Diodes, 6 Zener Diodes, 4 FET's
Dimensions (W×H×D)	240×53×250 mm
Weight	2.9kg

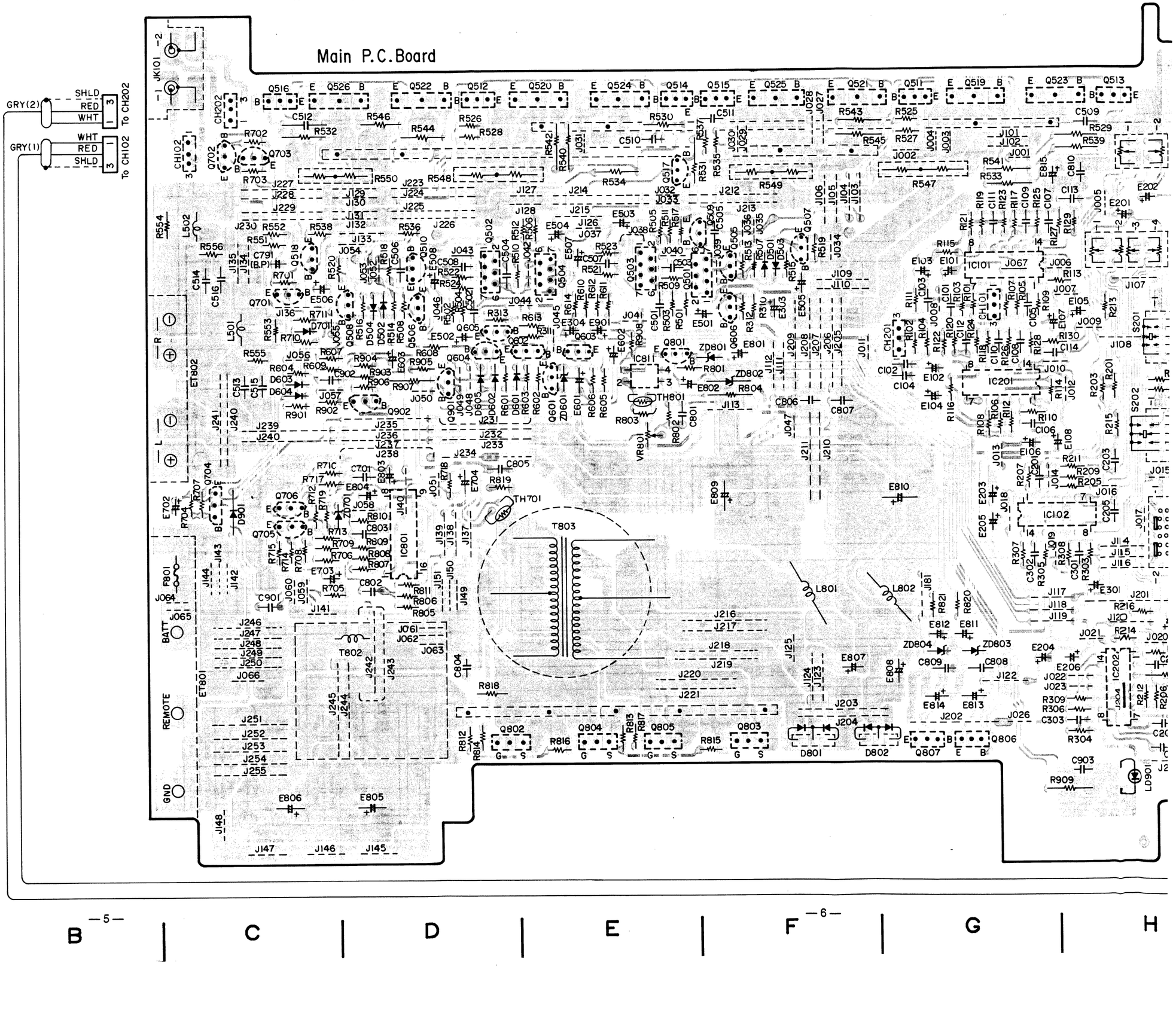
NOTE : Due to continuing product improvement, specifications and designs are subject to change without notice.

Block Diagram



Parts Layout on P.C.Board and Wiring Diagram

All P.C.Board viewed from soldered side.



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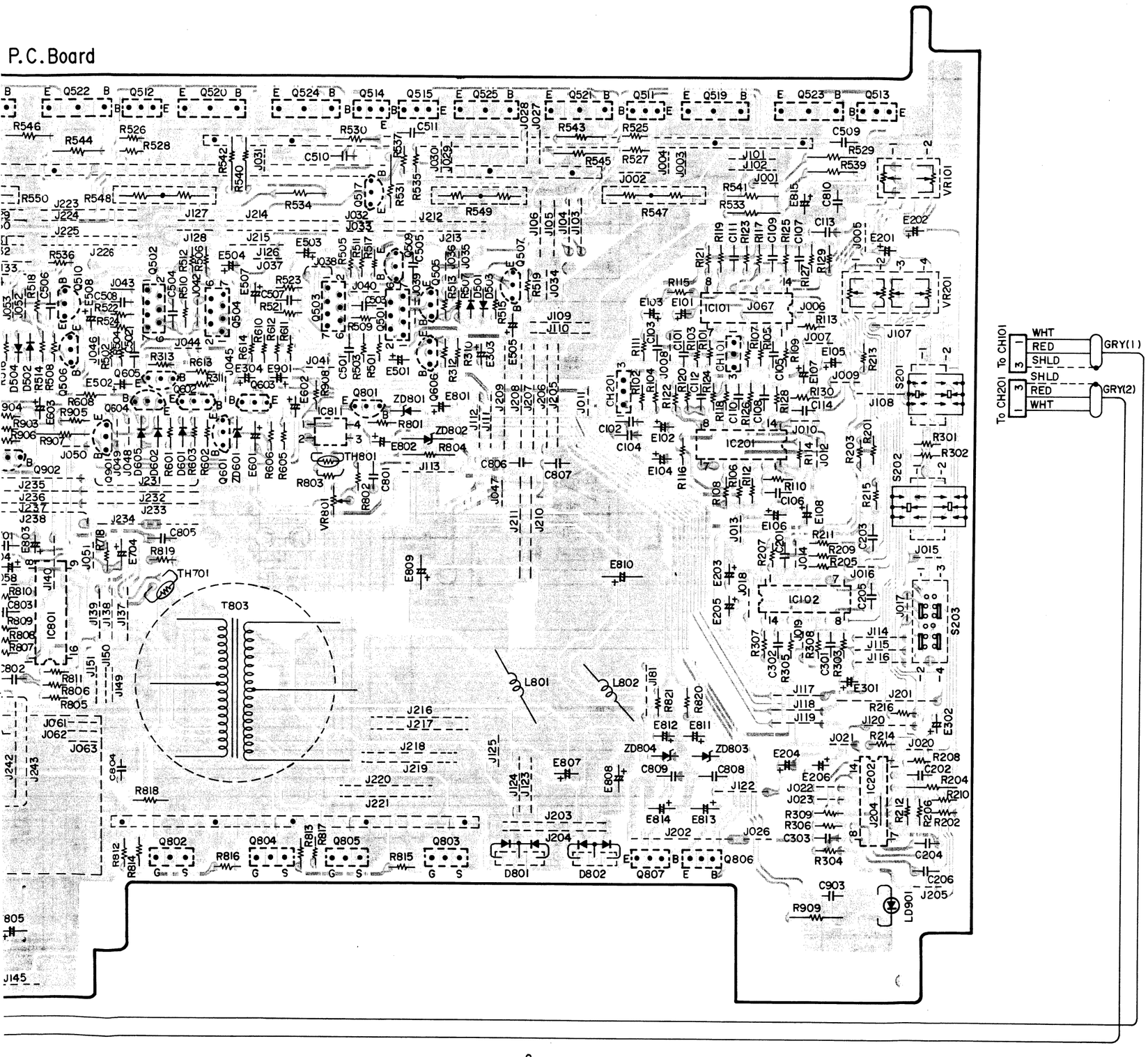
All P.C.Board viewed from soldered side.

P.C. Board



Blue Pattern : Foil Side Pattern

D | E | F | G | H | I | J | K | L

—6— —7—

Schematic Diagram

IC	IC101(1/4)(2/4) IC201(1/4)(2/4) IC101(3/4)(4/4) IC201(3/4)(4/4)	IC102(1/4) IC202(1/4)	IC102(2/4) IC202(2/4)	IC102(3/4) IC202(3/4)	IC102(4/4) IC202(4/4) IC811	IC801
Transistor (Q)	Q901 Q902	Q601	Q602 Q603 Q604	Q701 Q702 Q703	Q704 Q801	Q705 Q706	Q606 Q605	Q501 Q503 Q502 Q504	Q509 Q505 Q510 Q506 Q802 Q804 Q803 Q805	Q507 Q508	Q511 Q512

Main P.C.Board

JK101-1 INPUT CH-1 (L)

JK101-2 INPUT CH-2 (R)

JK101 JACK,RCA

GND ISOLATOR

GAIN CONTROL

VR201 CROSSOVER

FILTER

FILTER S201-1 SSAF123NA

FILTER S201-2 SSAF123NA

INPUT MODE S202-1 SSAF123NA

INPUT MODE S202-2 SSAF123NA

S203 PHASE SSSF142

BUFFER AMP

MUTING

PRE DRIVER

PRE AMP

BIAS

POWER SUPPLY TERMINAL ET801

CHOKE TRANS. T802

+B SWITCHING

MUTE DRIVER

SPEAKER/OVER LOAD/THERMAL & OVER CURRENT PROTECTOR

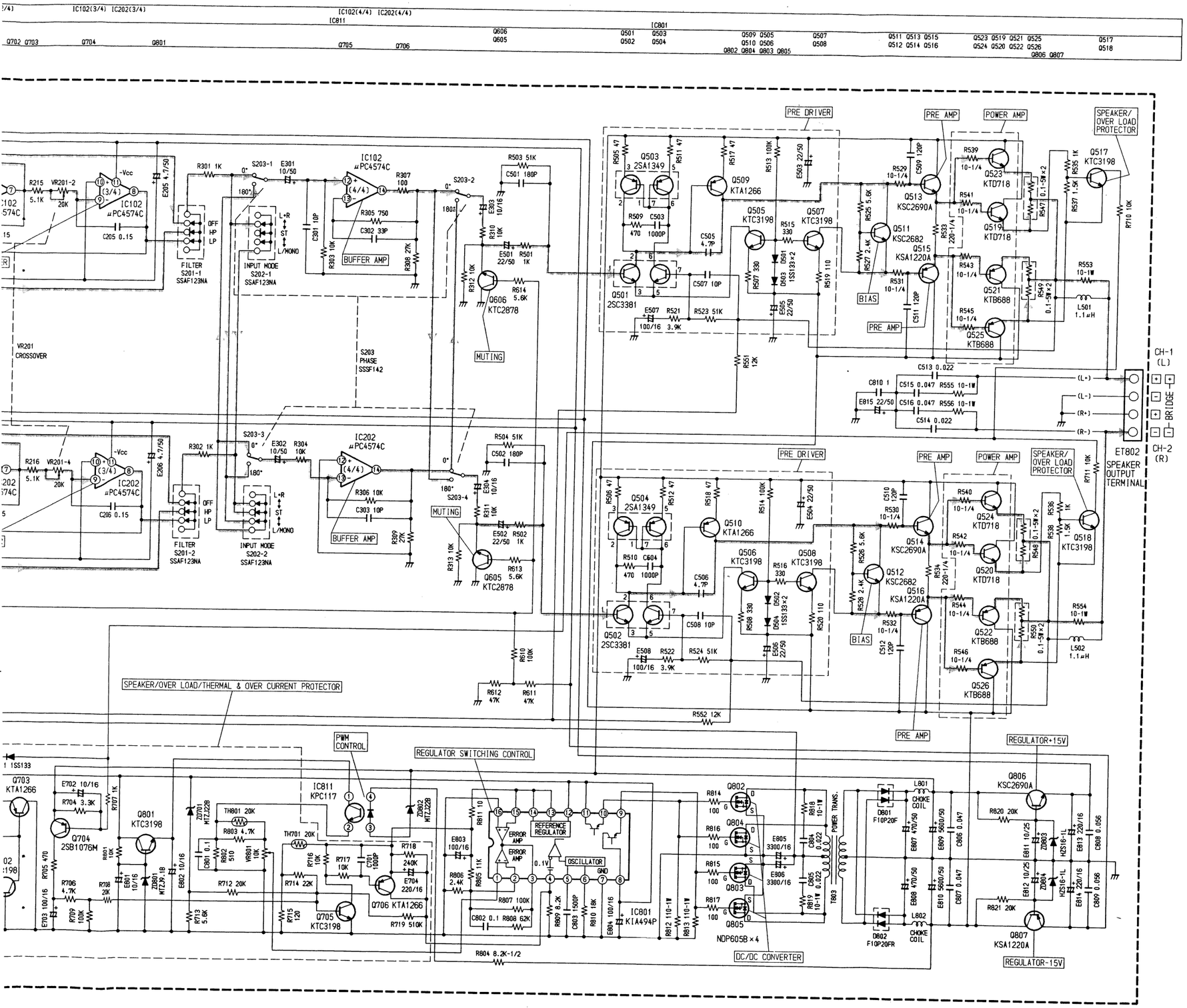
PWM CONTROL

REGULATOR SWITCHING CONTROL

REFERENCE REGULATOR

OSCILLATOR

DC/DC CONVERTER



IC101

1	0.65V	8	0.51V
2	0.65V	9	0.35V
3	0.64V	10	0.36V
4	14.87V	11	-15.39V
5	9.1mV	12	0.29V
6	9.3mV	13	0.29V
7	9.3mV	14	0.12V

IC102

1	0.6V	8	0V
2	1.7mV	9	0V
3	1.1mV	10	0V
4	14.67V	11	-15.39V
5	0V	12	4mV
6	0V	13	4mV
7	-2.1mV	14	4.6mV

IC201

1	0.63V	8	0.51V
2	0.64V	9	0.34V
3	0.62V	10	0.35V
4	14.87V	11	-15.39V
5	8.9mV	12	0.28V
6	8.4mV	13	0.27V
7	8.4mV	14	0.17V

IC202

1	-2.2mV	8	0V
2	1.9mV	9	0V
3	1.5mV	10	0V
4	14.87V	11	-15.4V
5	0V	12	0V
6	1mV	13	0V
7	-2.2mV	14	2.3mV

IC801

1	0.96V	9	0.24V
2	0.92V	10	0.23V
3	3.76V	11	14.3V
4	170mV	12	14.3V
5	1.6V	13	4.94V
6	3.67V	14	4.94V
7	0V	15	4.94V
8	14.3V	16	0V

IC811

1	8V
2	5.24V
3	12.3V
4	11.16V

	E	C	B		E	C	B
Q505	-33.89V	-0.67V	-33.8V	Q525	1mV	-34.48V	-0.5V
Q506	-33.7V	-0.64V	-33.1V	Q526	1.1mV	-34.35V	-0.5V
Q507	-33.94V	-1.09V	-33.9V	Q601	6.47V	12mV	6.47V
Q508	-33.8V	-1.1V	-34V	Q602	14.39V	-7.7V	14.39V
Q509	34.25V	1.1V	33.63V	Q603	9.7mV	14.39V	11mV
Q510	33.27V	1.12V	33.9V	Q604	0V	9.7mV	0.53V
Q511	-1.09V	1.1V	-0.45V	Q605	0V	0V	-7.68V
Q512	-1.1V	1.1V	-0.46V	Q606	0V	0V	-7.66V
Q513	0.52V	34.48V	1.13V	Q701	3.6mV	34V	3.6mV
Q514	0.52V	34.48V	1.1V	Q702	3.6mV	33.97V	0V
Q515	-0.5V	-34.48V	-1.1V	Q703	34V	0V	33.97V
Q516	-0.52V	-34.35V	-1.09V	Q704	34.29V	14mV	34.26V
Q517	0V	34.47V	1.1mV	Q705	0V	4.93V	17mV
Q518	0V	34.36V	1.1mV	Q706	4.94V	170mV	4.94V
Q519	1.2mV	34.5V	0.5V	Q801	8V	14.3V	8.68V
Q520	1.3mV	34.5V	0.52V	Q806	14.91V	34.12V	15.53V
Q521	1mV	-34.48V	-0.5V	Q807	-15.45V	-34V	-16.1V
Q522	1.1mV	-34.5V	-0.52V	Q901	14.39V	14.3V	13.57V
Q523	1.2mV	34.5V	0.5V	Q902	0V	0.16V	0.67V
Q524	1.3mV	34.5V	0.52V				

	S	D	G
Q802	0V	14.39V	0.23V
Q803	0V	14.39V	0.23V
Q804	0V	14.39V	0.24V
Q805	0V	14.39V	0.24V

	1	2	3	4	5	6	7
Q501	-0.98V	33.7V	-0.67V	NC	-0.67V	33.5V	-20mV
Q502	-114mV	33.1V	35V	NC	35V	32.36V	34.5V
Q503	33.72V	33.5V	34.35V	NC	34.35V	33.72V	33.72V
Q504	33.52V	33.5V	34.19V	NC	34.2V	33.52V	33.52V

Measuring Conditions

1. Power Supply Voltage : DC14.4V
2. Measuring Meter : Digital Multi Meter
3. Measuring Reference Point : Between Ground
4. Measuring Condition : No Signal Input

NOTE:
1. All resistance values are in ohms. K= 1,000 M= 1,000,000
2. All capacitance values are in microfarads. P= 1/1,000,000

MRV-T500 MRV-T500

Schematic Diagram

IC	IC101(1/4)(2/4) IC201(1/4)(2/4)	IC101(3/4)(4/4) IC201(3/4)(4/4)	IC102(1/4) IC202(1/4)	IC102(2/4) IC202(2/4)	IC102(3/4) IC202(3/4)	IC102(4/4) IC202(4/4) IC811	IC801
Transistor (Q)	Q901 Q902	Q601	Q602 Q603 Q604	Q701	Q702 Q703	Q704	Q801	Q705 Q706	Q606 Q605	Q501 Q502	Q503 Q504	Q509 Q505 Q510 Q506 Q802 Q804 Q803 Q805	Q507 Q508	Q511 Q513 Q512 Q514

Main P.C.Board

JK101-1 INPUT CH-1 (L)

JK101-2 INPUT CH-2 (R)

JK101 JACK,RCA

IC101 μPC4574C

IC201 μPC4574C

IC102 μPC4574C

IC202 μPC4574C

GND ISOLATOR

GAIN CONTROL

FILTER

VR201 CROSSOVER

FILTER S201-1 SSAF123NA

FILTER S201-2 SSAF123NA

INPUT MODE S202-1 SSAF123NA

INPUT MODE S202-2 SSAF123NA

S203 PHASE SSSF142

BUFFER AMP

MUTING

PRE DRIVER

Q503 2SA1349

Q509 KTA1266

Q505 KTC3198

Q507 KTC3198

Q511 KSC2682

Q513 KSC2690

Q501 2SC3381

BIAS

PRE AMP

Q504 2SA1349

Q510 KTA1266

Q506 KTC3198

Q508 KTC3198

Q512 KSC2682

Q502 2SC3381

Q606 KTC2878

Q605 KTC2878

CHOKE TRANS. T802

MUTE DRIVER

SPEAKER/OVER LOAD/THERMAL & OVER CURRENT PROTECTOR

PWM CONTROL

REGULATOR SWITCHING CONTROL

BATT

REMOTE

GND

POWER SUPPLY TERMINAL ET801

+B SWITCHING

Q901 KTA1266

Q902 KTC3198

Q601 KTA1266

Q602 KRA104M

Q603 KRC104M

Q604 KTC3198

Q701 KTC3198

Q702 KTC3198

Q703 KTA1266

Q704 2SB1076M

Q705 KTC3198

Q706 KTA1266

Q801 KTC3198

IC811 KPC117

IC801 KIA494P

REFERENCE REGULATOR

ERROR AMP

OSCILLATOR

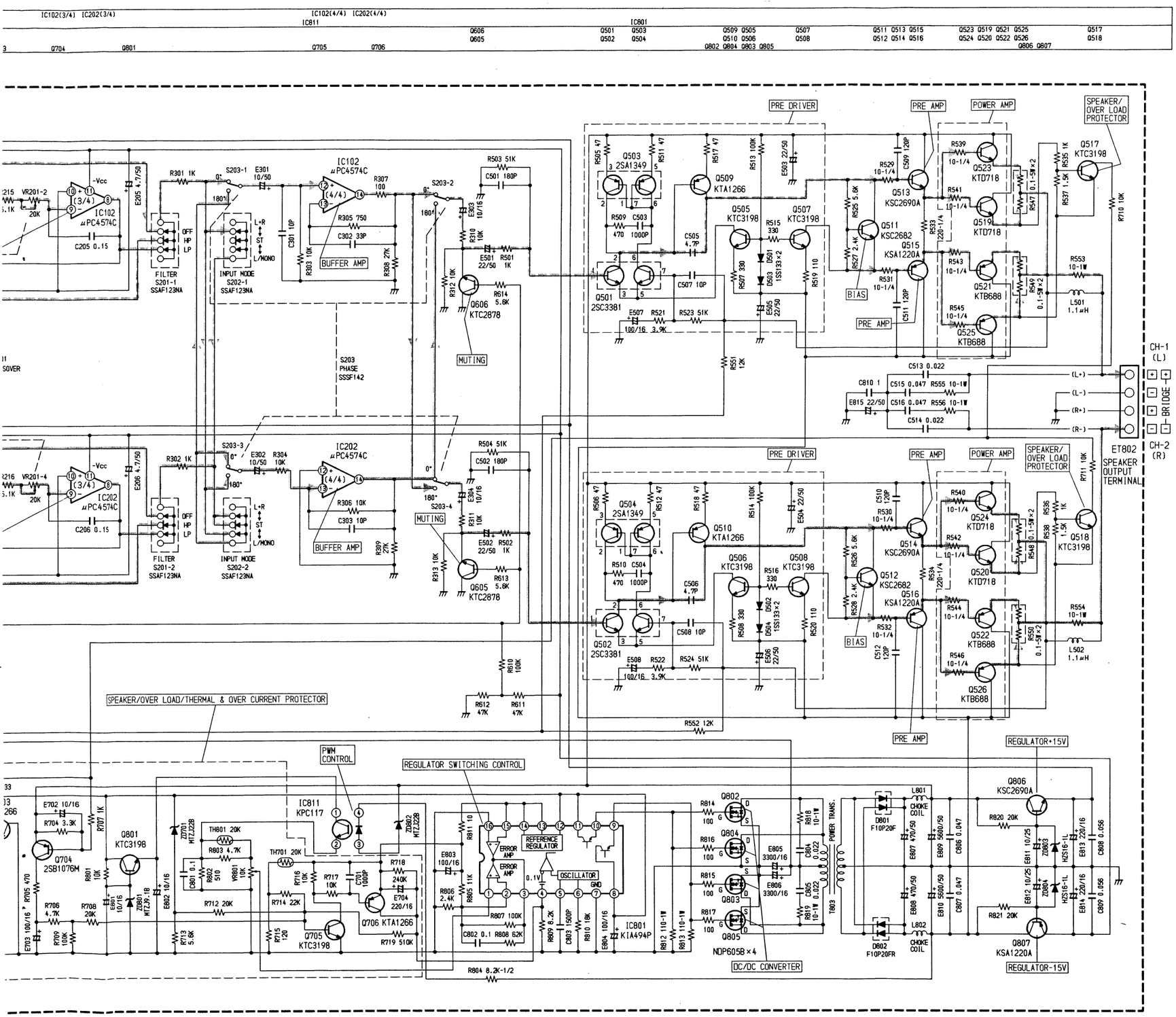
Q802 Q804 Q803 Q805 NDP605B×4

DC/DC CONVERTER

POWER TRANS. T803

D801 F10P20F

D802 F10P20FR



IC101			
1	0.65V	8	0.51V
2	0.65V	9	0.35V
3	0.64V	10	0.36V
4	14.87V	11	-15.39V
5	9.1mV	12	0.29V
6	9.3mV	13	0.29V
7	9.3mV	14	0.12V

IC102			
1	0.6V	8	0V
2	1.7mV	9	0V
3	1.1mV	10	0V
4	14.67V	11	-15.39V
5	0V	12	4mV
6	0V	13	4mV
7	-2.1mV	14	4.6mV

IC201			
1	0.63V	8	0.51V
2	0.64V	9	0.34V
3	0.62V	10	0.35V
4	14.87V	11	-15.39V
5	8.9mV	12	0.28V
6	8.4mV	13	0.27V
7	8.4mV	14	0.17V

IC202			
1	-2.2mV	8	0V
2	1.9mV	9	0V
3	1.5mV	10	0V
4	14.87V	11	-15.4V
5	0V	12	0V
6	1mV	13	0V
7	-2.2mV	14	2.3mV

IC801			
1	0.96V	9	0.24V
2	0.92V	10	0.23V
3	3.76V	11	14.3V
4	170mV	12	14.3V
5	1.6V	13	4.94V
6	3.67V	14	4.94V
7	0V	15	4.94V
8	14.3V	16	0V

IC811	
1	8V
2	5.24V
3	12.3V
4	11.16V

	E	C	B		E	C	B
Q505	-33.89V	-0.67V	-33.8V	Q525	1mV	-34.48V	-0.5V
Q506	-33.7V	-0.64V	-33.1V	Q526	1.1mV	-34.35V	-0.5V
Q507	-33.94V	-1.09V	-33.9V	Q601	6.47V	12mV	6.47V
Q508	-33.8V	-1.1V	-34V	Q602	14.39V	-7.7V	14.39V
Q509	34.25V	1.1V	33.63V	Q603	9.7mV	14.39V	11mV
Q510	33.27V	1.12V	33.9V	Q604	0V	9.7mV	0.53V
Q511	-1.09V	1.1V	-0.45V	Q605	0V	0V	-7.68V
Q512	-1.1V	1.1V	-0.46V	Q606	0V	0V	-7.66V
Q513	0.52V	34.48V	1.13V	Q701	3.6mV	34V	3.6mV
Q514	0.52V	34.48V	1.1V	Q702	3.6mV	33.97V	0V
Q515	-0.5V	-34.48V	-1.1V	Q703	34V	0V	33.97V
Q516	-0.52V	-34.35V	-1.09V	Q704	34.29V	14mV	34.26V
Q517	0V	34.47V	1.1mV	Q705	0V	4.93V	17mV
Q518	0V	34.36V	1.1mV	Q706	4.94V	170mV	4.94V
Q519	1.2mV	34.5V	0.5V	Q801	8V	14.3V	8.68V
Q520	1.3mV	34.5V	0.52V	Q806	14.91V	34.12V	15.53V
Q521	1mV	-34.48V	-0.5V	Q807	-15.45V	-34V	-16.1V
Q522	1.1mV	-34.5V	-0.52V	Q901	14.39V	14.3V	13.57V
Q523	1.2mV	34.5V	0.5V	Q902	0V	0.16V	0.67V
Q524	1.3mV	34.5V	0.52V				

	S	D	G
Q802	0V	14.39V	0.23V
Q803	0V	14.39V	0.23V
Q804	0V	14.39V	0.24V
Q805	0V	14.39V	0.24V

	1	2	3	4	5	6	7
Q501	-0.98V	33.7V	-0.67V	NC	-0.67V	33.5V	-20mV
Q502	-114mV	33.1V	35V	NC	35V	32.36V	34.5V
Q503	33.72V	33.5V	34.35V	NC	34.35V	33.72V	33.72V
Q504	33.52V	33.5V	34.19V	NC	34.2V	33.52V	33.52V

Measuring Conditions

1. Power Supply Voltage : DC14.4V
2. Measuring Meter : Digital Multi Meter
3. Measuring Reference Point : Between Ground
4. Measuring Condition : No Signal Input

NOTE:
1. All resistance values are in ohms. K= 1,000 M= 1,000,000
2. All capacitance values are in microfarads. P= 1/1,000,000

Electrical Parts List

Resistor : Carbon resistors under 1 / 4 watts are not mentioned in the parts list, please confirm them by schematic diagram.

Capacitor : μF = microfarads, pF = picofarads

Abbreviations

RES.=	Resistor	CAP.=	Capacitor
C.F.=	Carbon Film	ELY.=	Electrolytic
M.F.=	Metal Film	CER.=	Ceramic
M.O.=	Metal Oxide Film	MYL.=	Mylar
M.P.=	Metal Plate	TAN.=	Tantalum
TR.=	Transistor	POLY.=	Polystyrol
TRANS.=	Transformer	PP.=	Polypropylene
CP.=	Chip	PLT.=	Polyethylene
		PF.=	Polyester Film

Main P. C. Board

IC's

Symbol No.	Part No.	Description
IC101	51E22138S01	μPC4574C
IC102	51E22138S01	μPC4574C
IC201	51E22138S01	μPC4574C
IC202	51E22138S01	μPC4574C
IC801	51E20883S01	KIA494P
IC811	51E22140S01	KPC117

Transistors

Symbol No.	Part No.	Description
Q501	48T71942F01	2SC3381
Q502	48T71942F01	2SC3381
Q503	48T72597F01	2SA1349
Q504	48T72597F01	2SA1349
Q505	48E09088S01	KTC3198
Q506	48E09088S01	KTC3198
Q507	48E09088S01	KTC3198
Q508	48E09088S01	KTC3198
Q509	48E09036S02	KTA1266
Q510	48E09036S02	KTA1266
Q511	48E08329S01	KSC2682
Q512	48E08329S01	KSC2682
Q513	48E10027S01	KSC2690A
Q514	48E10027S01	KSC2690A
Q515	48E05943S01	KSA1220A
Q516	48E05943S01	KSA1220A
Q517	48E09088S01	KTC3198
Q518	48E09088S01	KTC3198
Q519	48E20885S01	KTD718
Q520	48E20885S01	KTD718
Q521	48E20884S01	KTB688
Q522	48E20884S01	KTB688
Q523	48E20885S01	KTD718
Q524	48E20885S01	KTD718
Q525	48E20884S01	KTB688
Q526	48E20884S01	KTB688
Q601	48E09036S02	KTA1266
Q602	48E10239S01	KRA104M
Q603	48E09035S02	KRC104M
Q604	48E09088S01	KTC3198
Q605	48E08335S01	KTC2878
Q606	48E08335S01	KTC2878
Q701	48E09088S01	KTC3198
Q702	48E09088S01	KTC3198
Q703	48E09036S02	KTA1266
Q704	48E22139S01	2SB1076M
Q705	48E09088S01	KTC3198
Q706	48E09036S02	KTA1266
Q801	48E09088S01	KTC3198
Q802	48E20886S01	FET, NDP605B
Q803	48E20886S01	FET, NDP605B
Q804	48E20886S01	FET, NDP605B
Q805	48E20886S01	FET, NDP605B
Q806	48E10027S01	KSC2690A
Q807	48E05943S01	KSA1220A
Q901	48E09036S02	KTA1266
Q902	48E09088S01	KTC3198

Diodes

Symbol No.	Part No.	Description
D501	48T68828F01	1SS133
D502	48T68828F01	1SS133
D503	48T68828F01	1SS133
D504	48T68828F01	1SS133
D601	48T68828F01	1SS133
D602	48T68828F01	1SS133
D603	48T68828F01	1SS133
D604	48T68828F01	1SS133
D605	48T68828F01	1SS133
D701	48T68828F01	1SS133
D801	48E22154S01	F10P20F
D802	48E22155S01	F10P20FR
D901	48E11440S01	RL103
ZD601	48T26033W32	Zener, MTZJ6.8A
ZD701	48E08332S01	Zener, MTZJ22B
ZD801	48E22162S01	Zener, MTZJ9.1B
ZD802	48E08332S01	Zener, MTZJ22B
ZD803	48T83128F49	Zener, HZS16-1L
ZD804	48T83128F49	Zener, HZS16-1L

Symbol No.	Part No.	Description
Switches		
S201	40E20895S01	SSAF123NA (FILTER)
S202	40E20895S01	SSAF123NA (INPUT MODE)
S203	40T94668F06	SSSF142 (PHASE)
Coils		
L501	24E06423S02	1.1µH
L502	24E06423S02	1.1µH
L801	25E20892S01	Choke
L802	25E20892S01	Choke
Thermistors		
TH701	48E20887S01	20K ohm
TH801	48E20887S01	20K ohm
LED / Transformers		
LD901	48E20888S01	LED, SLR54PG3 (GRN)
T802	25E20891S01	Choke
T803	25E22156S01	Power
Capacitors		
C101	08E20917S01	CER., 100pF
E101	23E22158S01	ELY., 10µF / 50V
C102	08E20917S01	CER., 100pF
E102	23E22158S01	ELY., 10µF / 50V
C103	08E22161S01	CER., 4700pF
E103	23E20208S01	ELY., 47µF / 16V
C104	08E22161S01	CER., 4700pF
E104	23E20208S01	ELY., 47µF / 16V
C105	21E06806S02	CER., 33pF
E105	23E08383S16	ELY., 4.7µF / 50V
C106	21E06806S02	CER., 33pF
E106	23E08383S16	ELY., 4.7µF / 50V
C107	21E06806S02	CER., 33pF
E107	23E08383S16	ELY., 4.7µF / 50V
C108	21E06806S02	CER., 33pF
E108	23E08383S16	ELY., 4.7µF / 50V
C109	08E20072S01	CER., 10pF
C110	08E20072S01	CER., 10pF
C111	08E20072S01	CER., 10pF
C112	08E20072S01	CER., 10pF
C113	08E20915S01	CER., 47pF

Symbol No.	Part No.	Description
C114	08E20915S01	CER., 47pF
C201	08E20917S01	CER., 100pF
E201	23E20208S01	ELY., 47µF / 16V
C202	08E20917S01	CER., 100pF
E202	23E20208S01	ELY., 47µF / 16V
C203	08E07631S11	MYL., 0.15µF
E203	23E08383S16	ELY., 4.7µF / 50V
C204	08E07631S11	MYL., 0.15µF
E204	23E08383S16	ELY., 4.7µF / 50V
C205	08E07631S11	MYL., 0.15µF
E205	23E08383S16	ELY., 4.7µF / 50V
C206	08E07631S11	MYL., 0.15µF
E206	23E08383S16	ELY., 4.7µF / 50V
C301	08E20072S01	CER., 10pF
E301	23E22158S01	ELY., 10µF / 50V
C302	21E06806S02	CER., 33pF
E302	23E22158S01	ELY., 10µF / 50V
C303	08E20072S01	CER., 10pF
E303	23E08383S08	ELY., 10µF / 16V
E304	23E08383S08	ELY., 10µF / 16V
C501	08E20918S01	CER., 180pF
E501	23E08383S12	ELY., 22µF / 50V
C502	08E20918S01	CER., 180pF
E502	23E08383S12	ELY., 22µF / 50V
C503	21E06808S03	CER., 1000pF
E503	23E08383S12	ELY., 22µF / 50V
C504	21E06808S03	CER., 1000pF
E504	23E08383S12	ELY., 22µF / 50V
C505	08E20914S01	CER., 4.7pF
E505	23E08383S12	ELY., 22µF / 50V
C506	08E20914S01	CER., 4.7pF
E506	23E08383S12	ELY., 22µF / 50V
C507	08E20072S01	CER., 10pF
E507	23E10238S01	ELY., 100µF / 16V
C508	08E20072S01	CER., 10pF
E508	23E10238S01	ELY., 100µF / 16V
C509	08E22160S01	CER., 120pF
C510	08E22160S01	CER., 120pF
C511	08E22160S01	CER., 120pF
C512	08E22160S01	CER., 120pF
C513	08E07631S10	MYL., 0.022µF
C514	08E07631S10	MYL., 0.022µF
C515	08E07631S18	MYL., 0.047µF
C516	08E07631S18	MYL., 0.047µF
E601	23E20210S01	ELY., 220µF / 16V
E602	23E08383S08	ELY., 10µF / 16V
E603	23E08383S08	ELY., 10µF / 16V
C701	21E06808S03	CER., 1000pF
E702	23E08383S08	ELY., 10µF / 16V
E703	23E10238S01	ELY., 100µF / 16V
E704	23E20210S01	ELY., 220µF / 16V
C791	23E11142S01	ELY., (B.P) 100µF / 10V

Symbol No.	Part No.	Description
C801	08E07631S08	MYL., 0.1μF
E801	23E08383S08	ELY., 10μF / 16V
C802	08E07631S08	MYL., 0.1μF
E802	23E08383S08	ELY., 10μF / 16V
C803	08E07631S01	MYL., 1500pF
E803	23E10238S01	ELY., 100μF / 16V
C804	08E07631S10	MYL., 0.022μF
E804	23E10238S01	ELY., 100μF / 16V
C805	08E07631S10	MYL., 0.022μF
E805	23T65461W14	ELY., 3300μF / 16V
C806	08E07631S18	MYL., 0.047μF
E806	23T65461W14	ELY., 3300μF / 16V
C807	08E07631S18	MYL., 0.047μF
E807	23E22148S01	ELY., 470μF / 50V
C808	08E20913S01	MYL., 0.056μF
E808	23E22148S01	ELY., 470μF / 50V
C809	08E20913S01	MYL., 0.056μF
E809	23T75365W01	ELY., 5600μF / 50V
C810	08E22159S01	PF., 1μF
E810	23T75365W01	ELY., 5600μF / 50V
E811	23E22157S01	ELY., 10μF / 25V
E812	23E22157S01	ELY., 10μF / 25V
E813	23E20210S01	ELY., 220μF / 16V
E814	23E20210S01	ELY., 220μF / 16V
E815	23E08383S12	ELY., 22μF / 50V
C901	08E07631S11	MYL., 0.15μF
E901	23E20908S01	ELY., 3.3μF / 50V
C902	21E06808S03	CER., 1000pF
C903	08E20216S01	MYL., 0.01μF

Resistors

R547	06E22136S01	Plate, 0.1 ohm 5W × 2
R548	06E22136S01	Plate, 0.1 ohm 5W × 2
R549	06E22136S01	Plate, 0.1 ohm 5W × 2
R550	06E22136S01	Plate, 0.1 ohm 5W × 2
R553	06E20907S01	M.O., 10 ohm 1W
R554	06E20907S01	M.O., 10 ohm 1W
R555	06E20907S01	M.O., 10 ohm 1W
R556	06E20907S01	M.O., 10 ohm 1W
R804	06E20933S01	M.O., 8.2Kohm 1/2W
R812	06E22146S01	M.O., 110 ohm 1W
R813	06E22146S01	M.O., 110 ohm 1W
R818	06E20907S01	M.O., 10 ohm 1W
R819	06E20907S01	M.O., 10 ohm 1W
VR101	18E20880S01	Volume, 50K ohm × 2 (GAIN)
VR201	18E20879S01	Volume, 20K ohm × 4 (CROSSOVER)
VR801	18E20754S01	Variable, 10K ohm

Symbol No.	Part No.	Description

Miscellaneous

ET801	09E20897S01	Terminal (Power Supply)
ET802	09E20896S01	Terminal (Speaker Output · CH-1 / CH-2)
F801	65S58596F08	Fuse, Auto 30A (For Battery Line)
JK101	09E22143S01	Jack, RCA (Input · CH-1 / CH-2)

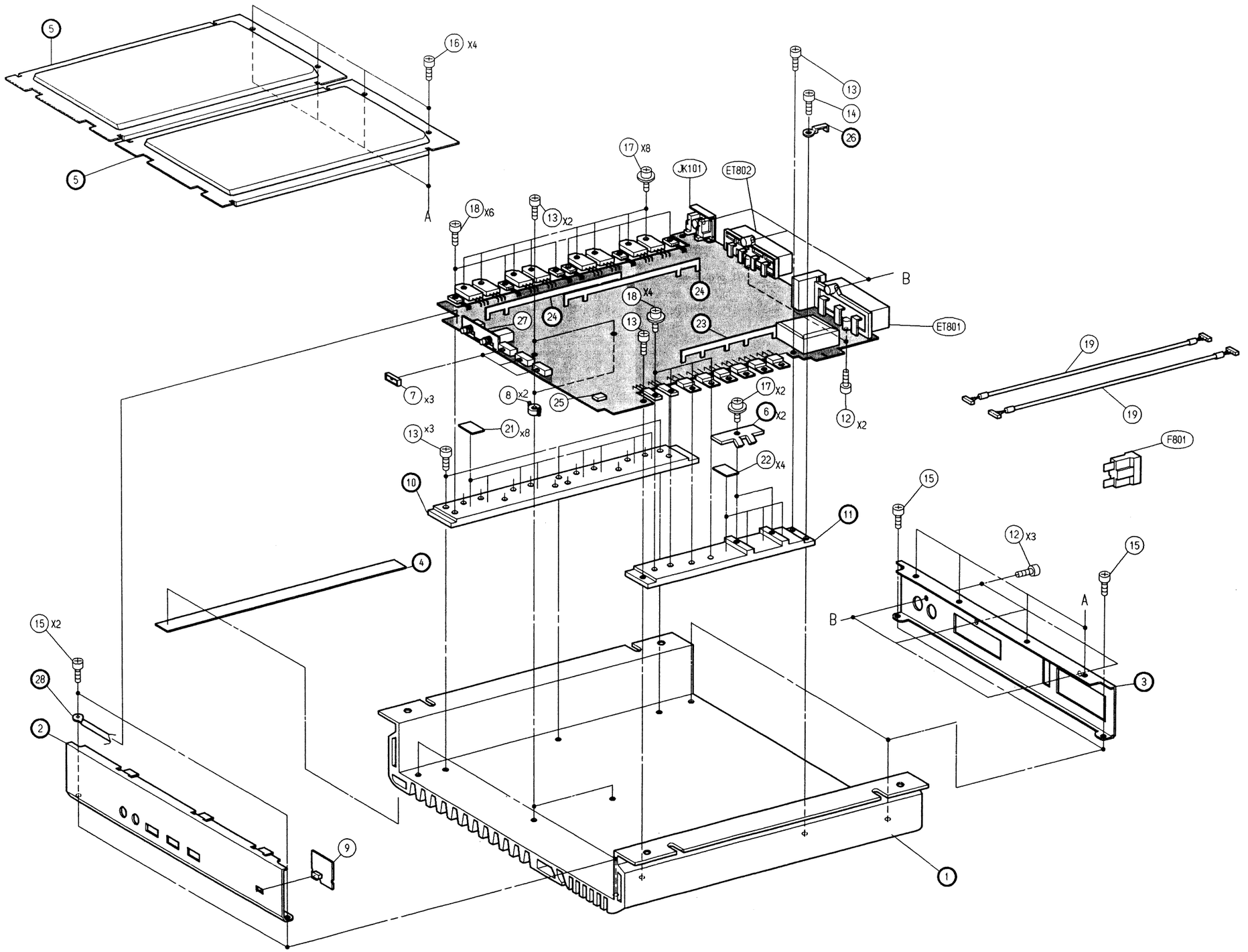
Cabinet Assembly Parts List

Note : No parts number on parts list are not supplied.

Symbol No.	Index	Part No.	Description
7	3-C	15E11445S01	Cover, Switch
8	3-D	07E10333S01	Support, P.C.Board
9	5-C	61E20924S01	Lens, LED
12		03E09416S09	Screw, Tapping (M3×10)
13		03E09417S06	Screw, Tapping (M3×11)
14	1-E	03E20920S01	Screw, Tapping (M3×5)
15		03E20077S01	Screw, Tapping (M3×6)
16	1-C	03E20921S01	Screw, MCH (M3×5)
17		03E20922S01	Screw, Tapping (M3×11)
18		03E20923S01	Screw, Tapping (M3×9)
19		01E10234S01	Assy., Shield Wire
21	3-D	14E11487S01	Insulator, Sheet-B
22	3-E	14E20977S01	Insulator, Sheet-A
25	3-D	75E22020S01	Cushion
27	2-D	07E22585S01	Bracket, GND

Symbol No.	Index	Part No.	Description

Exploded View (Cabinet)



1 2 3 4 5

A | B | C | D | E | F | G | H

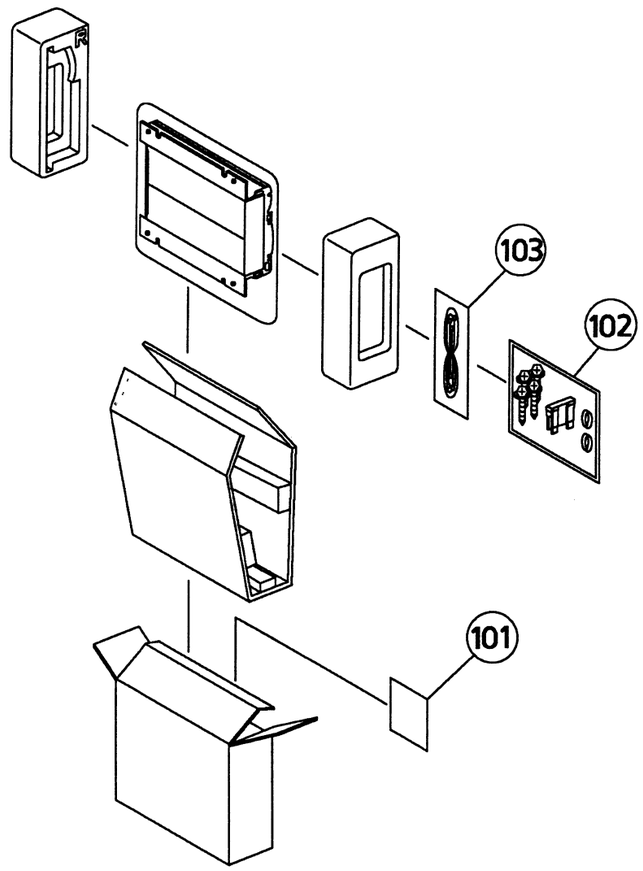
Packing Assembly Parts List

Symbol No.		Part No.	Description
○	101	68P61487W14	Owner's Manual
△	101	68P61487W14	Owner's Manual
△	or	68P61487W36	Owmer's Manual
★	101	68P61487W13	Owner's Manual
	102-1	03E11447S01	Screw, Tapping (M4×14)
	102-2	28E20925S01	Housing, Rubber-A
	102-3	65S58596F08	Fuse, Auto 30A
△	103-1	01E22150S01	Assy., Battery Wire
★	103-1	01E22150S01	Assy., Battery Wire
△	103-2	01E22151S01	Assy., GND Wire

Symbol No.		Part No.	Description
★	103-2	01E22151S01	Assy., GND Wire
△	103-3	01E20928S01	Assy., Remote Wire
★	103-3	01E20928S01	Assy., Remote Wire
★	103-4	01E22152S01	Assy., Speaker Wire (+)
★	103-5	01E22153S01	Assy., Speaker Wire (-)

Notes : ○ : For North American Model Only, △ : For General Foreign Model Only,
★ : For Japanese Model Only, Others : Common.

Packing Method View

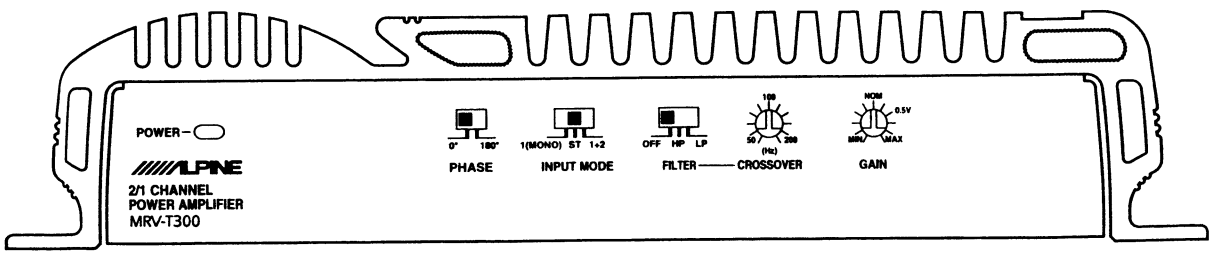


MEMO

ALPINE®

SERVICE MANUAL

2/1 Channel Power Amplifier



サービス費用区分	B
技 術 資 料 No.	PM-54-O

MRV-T300

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Additional Schematic Diagram inserted.

Specifications

Power Output (20Hz~20kHz)	4ohm-2channel, 0.04% T.H.D. : 50W
	2ohm-2channel, 0.3% T.H.D. : 70W
	4ohm-1channel, 0.3% T.H.D., BTL : 150W
S / N Ratio (55W / ch / 4ohm, Input shorted)	98dB
Input Sensitivity (55W / ch Output)	LINE, CW : 0.2V±3dB
	LINE, Center : 1V±3dB
	LINE, CCW : 4V±3dB
	SP., CW : 0.4V±3dB
	SP., Center : 2V±3dB
	SP., CCW : 8V±3dB
Input Impedance	LINE : 11±2kohm
	SP. : 15±3ohm
Frequency Response (-1dB at 1kHz)	10Hz~50kHz
Current Drain	4ohm-2channel, 10% T.H.D. : 20A
	2ohm-2channel, 10% T.H.D. : 32A
	4ohm-1channel, BTL : 28A
Residual Noise (Input shorted)	1.2mV
Channel Separation (Input Shorted, at 1kHz)	55dB
Fuse Requirement	20A (For Battery Line)
Power Source	DC14.4V (11~16V)
Semiconductors	5 IC's, 38 Transistors, 14 Diodes, 4 Zener Diodes, 2 FET's
Dimensions (W×H×D)	240×53×150 mm
Weight	1.9kg

NOTE : Due to continuing product improvement, specifications and designs are subject to change without notice.

接続図 ★詳しい接続方法は、販売店またはアルパイン·インフォメーションセンターにお問い合わせください。

図-5 フルレンジ、ツィータ／ミッドレンジ、サブウーハー(ステレオ接続)

使用スピーカ	クロスオーバー·モード切替スイッチ(FILTER)	入力モード切替スイッチ(INPUT MODE)
①フルレンジ	OFF HP LP	1(MONO) ST 1+2 INPUT MODE
②ツィータ／ミッドレンジ	OFF HP LP	
③サブウーハー	OFF HP LP	

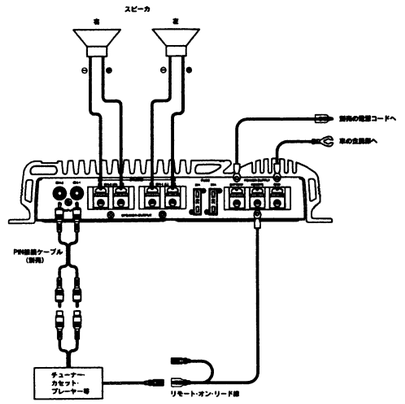


図-6 サブウーハー(ミックス接続)

使用スピーカ	クロスオーバー·モード切替スイッチ(FILTER)	入力モード切替スイッチ(INPUT MODE)
サブウーハー	OFF HP LP	1(MONO) ST 1+2 INPUT MODE

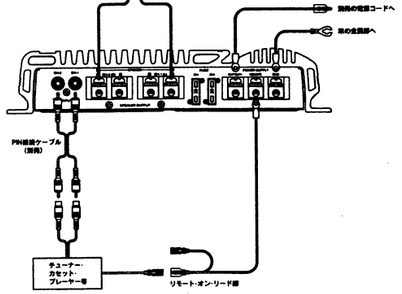


図-7 サブウーハー(フリッシ接続)

使用スピーカ	クロスオーバー·モード切替スイッチ(FILTER)	入力モード切替スイッチ(INPUT MODE)
サブウーハー	OFF HP LP	1(MONO) ST 1+2 INPUT MODE

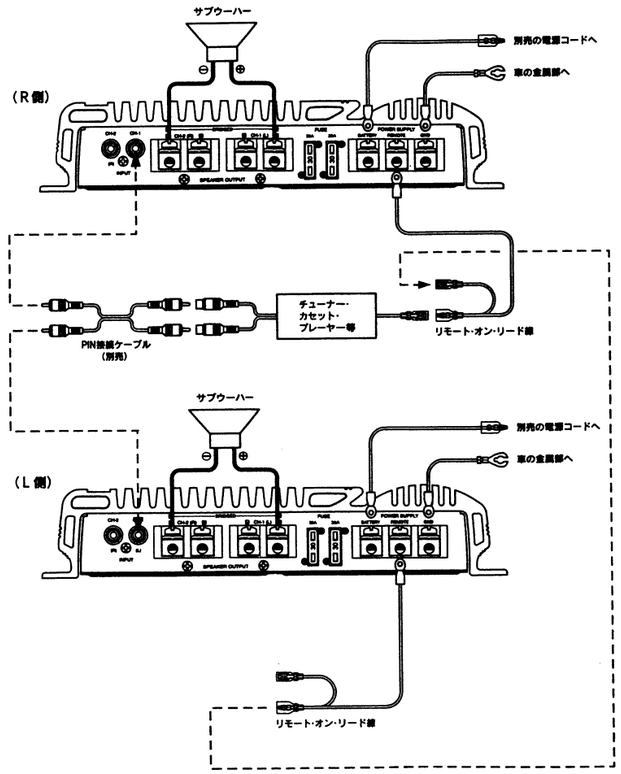
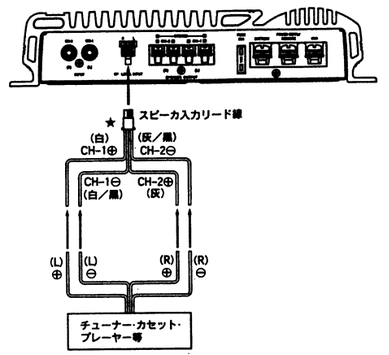


図-8 スピーカ入力リード線接続

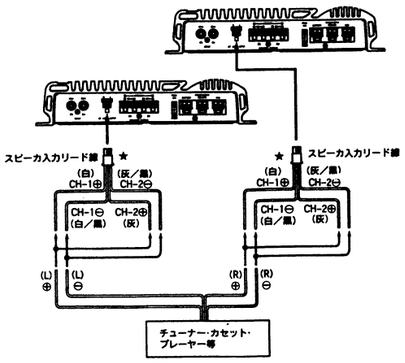
※MRV-T300のみ



★接続の際、入力用ピンジャックとスピーカ入力の同時使用はできません。必ずどちらか一方をお使い下さい。

図-9 スピーカ入力リード線ステレオ接続

※MRV-T300のみ



★接続の際、入力用ピンジャックとスピーカ入力の同時使用はできません。必ずどちらか一方をお使い下さい。

接　続

本機はパワーアンプですので音量、音質等はすべて、カセット・デッキやクラフィック・イコライザー等の接続側で調整をおこないます。
下記に従って各々のリード線を確実に接続してご使用ください。

MRV-1000

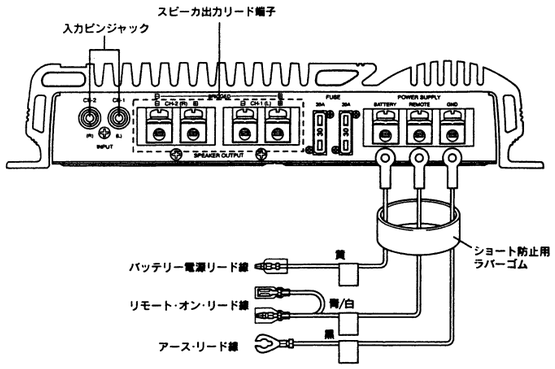


図-2

MRV-T500/MRV-T300

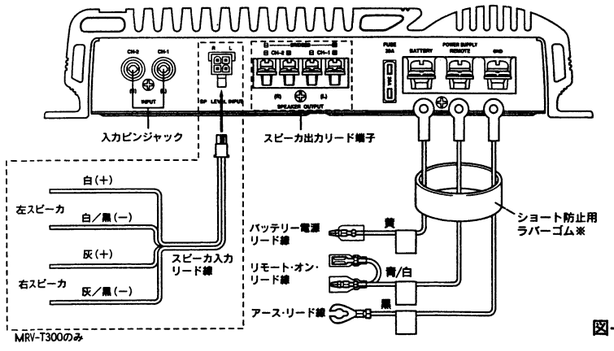


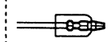
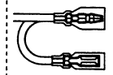
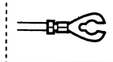
図-3

■スピーカ出力リード端子
本機の出力に合ったスピーカに⊕、⊖、L、Rを間違えないように接続します。スピーカ出力リード線の⊖端子は絶対に左・右共通使用や自動車のシャーシー・アースに落とすことは避けてください。

■ショート防止用ラバーゴム
隣接端子間のショート防止用のラバーゴムです。各々のリード線を接続する前にこのラバーゴムをリード線に通してから接続した後、スピーカ出力端子および電源端子に覆いかぶせてください。

■MRV-1000のみ
付属のリード線を使用せず市販のリード線（スピーカ／電源コード）を使用する場合、本機に付属されている六角ネジと六角レンチを使用すると簡単に配線する事が可能です。
ワイヤーサイズはAWG6～AWG18以外は使用できません。

コードの色分けと役割

接続コードの色		名称と働き
黄		●バッテリー電源リード線 常にバッテリー電源が供給されているところ（バッテリーのプラス端子）に確実に接続します。
青／白		●リモート・オン・リード線 連動させる製品（チューナー・カセット・プレーヤー、イコライザーなど）のリモート・オン・リード線に接続します。
黒		●アース・リード線 車体の金属部に確実に接続します。 Point 車体の塗装をはがした箇所にネジ止めします。

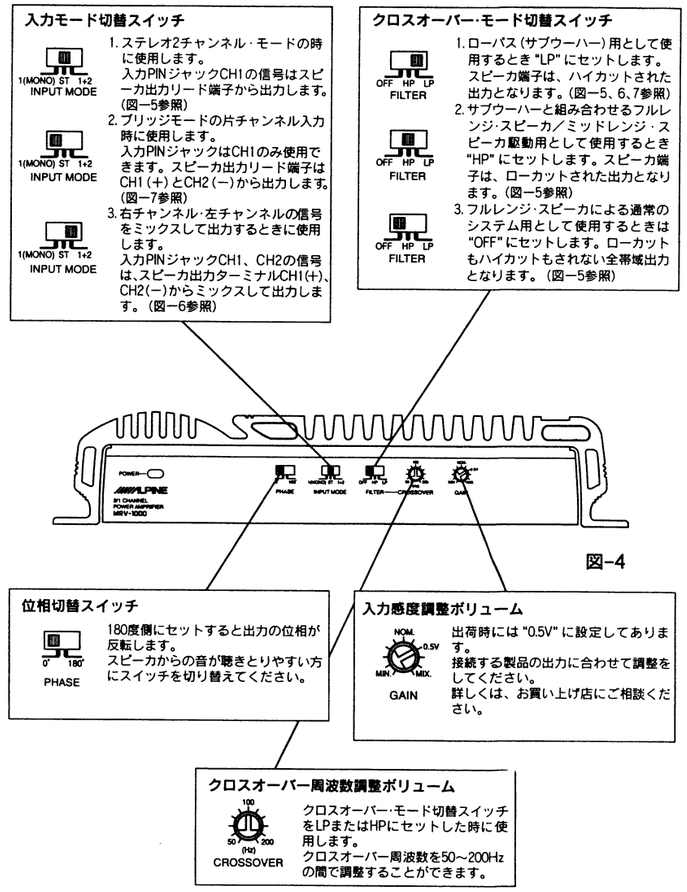


図-4

TYPICAL SYSTEM CONNECTIONS/CONNEXIONS TYPIQUES DU SYSTÈME/CONEXIONES TIPICAS DEL SISTEMA

[English]
- Right Speaker
- Left Speaker
- Extension Cable (Sold Separately)
- Head Unit with Pre-Amp Outputs
- Speakers
- Full-range Speakers
- Tweeter/Midrange
- Subwoofer

[Français]
- Haut-parleur droit
- Haut-parleur gauche
- Câble de rallonge (vendu séparément)
- Unité principale avec sorties de préamplificateur
- Haut-parleurs
- Haut-parleurs de large bande
- Haut-parleur d'aigus/de gamme moyenne
- Haut-parleur de sous-graves

[Español]
- Altavoz derecho
- Altavoz izquierdo
- Cable de extensión (vendido separadamente)
- Unidad principal con salidas de preamplificador
- Altavoces
- Altavoces de gama completa
- Altavoz de agudos/tonos medios
- Altavoz de frecuencias ultrabajas

2-Channel Stereo System/Système stéréo à 2 canaux/Sistema estéreo de 2 canales

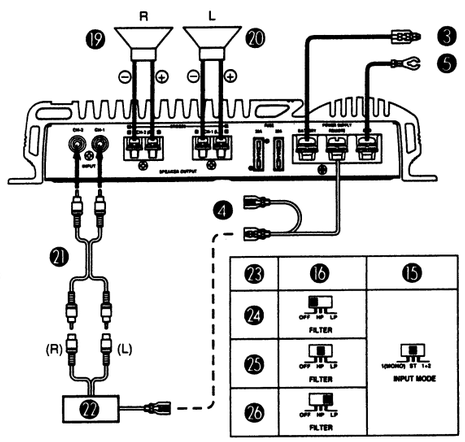


Fig. 4

Single Channel System/Système à canal unique/Sistema de canal único

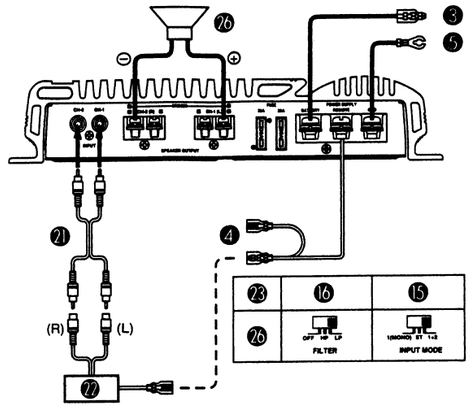


Fig. 5

Single Channel Stereo System/Système à canal unique stéréo/ Sistema estéreo de canal único

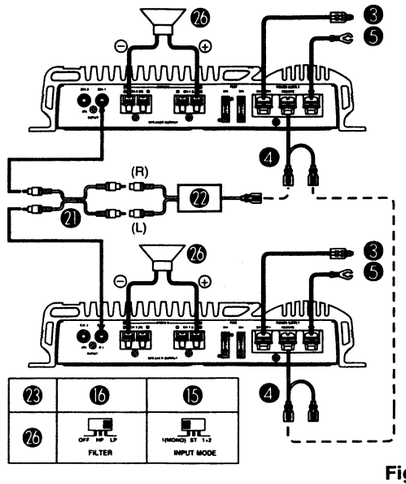


Fig. 6

Speaker Input Leads System/Système des conducteurs d'entrée de haut-parleur/Sistema de conductores de entrada de altavoz

MRV-T300 Only/Uniquement MRV-T300/MRV-T300 solamente

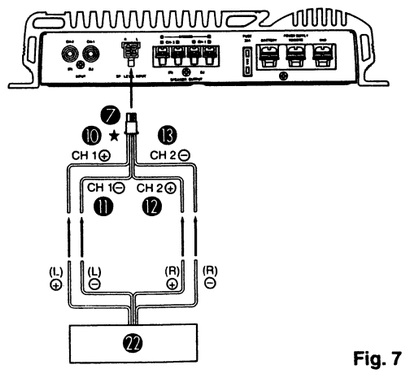


Fig. 7

Speaker Input Leads Stereo System/Système stéréo des conducteurs d'entrée de haut-parleur/Sistema estéreo de conductores de entrada de altavoz

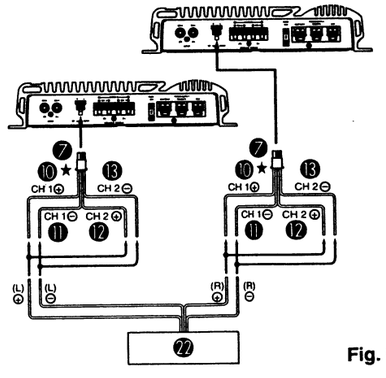
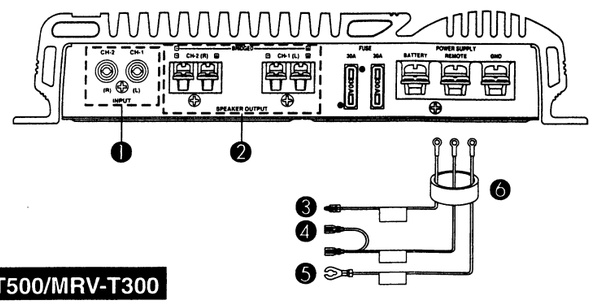


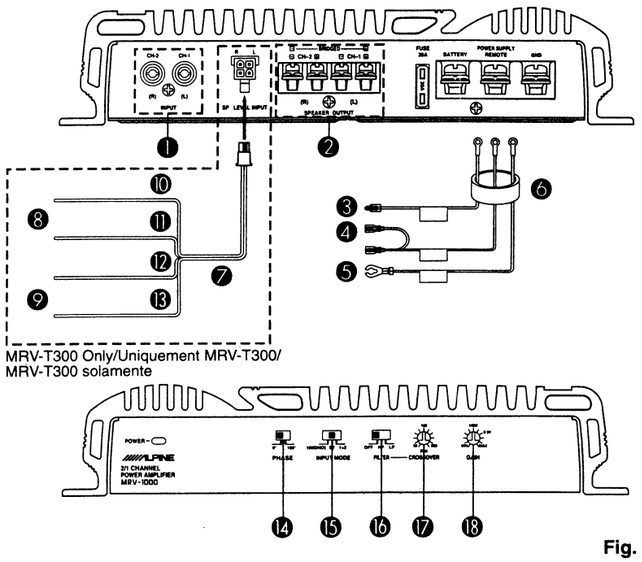
Fig. 8

★ Use either RCA line level or speaker level inputs. Do not connect both at the same time./Utiliser les entrées de niveau de ligne RCA ou de niveau de haut-parleur. Jamais les connecter à la fois./Utilice las entradas de nivel de altavoz o de nivel de línea RCA. No conecte las dos al mismo tiempo.

MRV-1000



MRV-T500/MRV-T300



MRV-T300 Only/Uniquement MRV-T300/
MRV-T300 solamente

Fig. 2

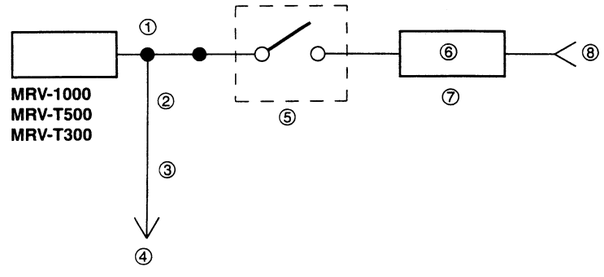


Fig. 3

CONNECTIONS (Fig. 2 – Fig. 8)

Before making connections, be sure to turn the power off to all audio components. Connect the yellow battery lead from the amp directly to the positive (+) terminal of the vehicle's battery. Do not connect this lead to the fuse block.

To prevent external noise from entering the audio system.

- Locate the unit and route the leads at least 10 cm away from the car harness.
- Keep the battery power leads as far away from other leads as possible.
- Connect the ground lead securely to a bare metal spot (remove the coating if necessary) of the car chassis.
- If you add an optional noise suppressor, connect it as far away from the unit as possible. Your Alpine dealer carries various Alpine noise suppressors, contact them for further information.
- Your Alpine dealer knows best about noise prevention measures so consult your dealer for further information.

● **RCA Input Jacks**
Connect these jacks to the line out leads on your head unit using RCA extension cables (sold separately). Be sure to observe correct channel connections; Left to Left and Right to Right.

● **Speaker Output Terminals**
The MRV-1000/MRV-T500/MRV-T300 has two sets of speaker outputs. Be sure to observe correct speaker output connections and phasing. In the stereo mode, connect the right speaker outputs to the right speaker and the left to left. Connect the positive output to the positive speaker terminal and the negative to negative.

In the bridged mode, connect the left positive to the positive terminal on the speaker and the right negative to the negative terminal of the speaker. Do not use the speaker (–) terminals as a common lead between the left and right channels. Do not connect this lead to the vehicle's chassis.
NOTE:
Do not connect speaker leads together or to chassis ground.

● **Battery Lead (Yellow) (USA/CANADA Models: Sold Separately)**
Be sure to add a ★ 60 amp fuse (or two 30A fuses in parallel) as close as possible to the battery's positive (+) terminal. This fuse will protect your vehicle's electrical system in case of a short circuit. If you need to extend this lead, the wire gauge should be 8 AWG or larger.
★ MRV-1000 ... 60 amp fuse (or two 30A fuses in parallel)
MRV-T500 ... 30 amp fuse
MRV-T300 ... 25 amp fuse

● **Remote Turn-On Lead (Blue/White) (USA/CANADA Models: Sold Separately)**
Connect this lead to the remote turn-on or power antenna (positive trigger, (+) 12V only) lead of your head unit.

● **Ground Lead (Black) (USA/CANADA Models: Sold Separately)**
Connect this lead securely to a clean, bare metal spot on the vehicle's chassis. Verify this point to be a true ground by checking for continuity between that point and the negative (–) terminal of the vehicle's battery. Ground all your audio components to the same point on the chassis to prevent ground loops.

● **Insulation Tube**

● **Speaker Input Leads**
These leads are input leads for use with head units not equipped with preamp outputs. When not using the RCA Line Input connectors, you should connect these wires to the speaker output leads of your head unit. The MRV-T300 accepts input from high power or standard power head units.

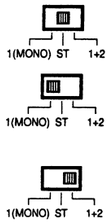
● **Left Speaker**
● **Right Speaker**
● **White (+)**
● **White/Black (–)**
● **Gray (+)**
● **Gray/Black (–)**

MRV-1000 Only
In case of using the leads (speaker/power supply cord) purchased at the market, use the hexagon screws and the hexagon wrench included as the accessory to make connection easier. The wire size should be within AWG6 – AWG18.

SWITCH SETTINGS

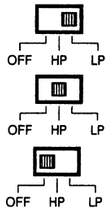
● **High-pass Output Phase Switch**
Sets the phase of this output to 0° (in phase) or 180° (inverted) independently from the other output. Often, the subwoofer and midrange (or midrange and tweeter) may be acoustically out of phase with each other, meaning all the sound will cancel completely or partially. Also, 2nd order filters are naturally out-of-phase electrically. Always try the phase switch to establish the best setting before fine-tuning the crossover frequencies.

● **Input Mode Selector Switch**



a) Set to the "ST" position (center) when the two channels are used in stereo. The CH-1 (or CH-2) input will output at the Speaker Output Terminal CH-1 (or CH-2).
b) Set to the "1 (MONO)" position when the two channels are used for one channel of a stereo bridged system. The CH-1 input is output from the Speaker Output Terminals CH-1(+) and CH-2 (–). The CH-2 input accepts no signal. (Refer to Fig. 6.)
c) Set to the "1 + 2" position when the two channels are used for a subwoofer system which uses the right channel and left channel signals summed. The CH-1 and CH-2 inputs are summed, then output from the Speaker Output Terminals CH-1(+) and CH-2 (–). (Refer to Fig. 5.)

● **Crossover Mode Selector Switch**



a) Set to the "LP" position when the amplifier is used to drive a subwoofer. The frequencies above the crossover point will be attenuated at 12 dB/octave.
b) Set to the "HP" position when the amplifier is used to drive a tweeter/midrange system. The frequencies below the crossover point will be attenuated at 12 dB/octave.
c) Set to the "OFF" position when the amplifier will be used for driving full-range speakers. The full frequency bandwidth will be output to the speakers with no high or low frequency attenuation.

● **Crossover Frequency Adjustment Knob**
Permits adjustment of the crossover frequency, by rotating the knob to select any frequency between 50 to 200 Hz as the crossover point.

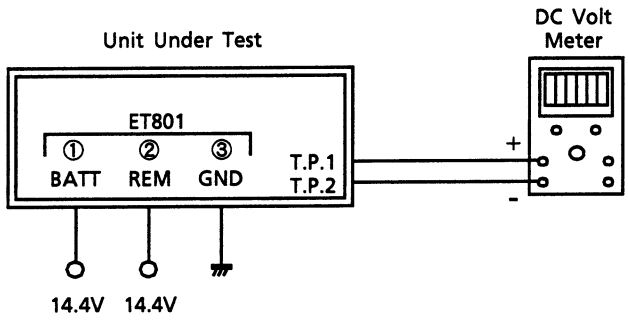
● **Input Gain Adjustment Control**
Set the MRV-1000/MRV-T500/MRV-T300 input gain knobs to the minimum (4V) position. Using a loud cassette or preferably a CD as a source, turn up the head unit volume until it distorts. Then, reduce the volume 1 step. You can then increase amplifier gain until the sound from the speakers becomes distorted.

Please check your head unit for the conditions listed below: (Fig. 3)
a. The head unit does not have a remote turn-on or power antenna lead.
b. The head unit's power antenna lead is activated only when the radio is on (turns off in the tape or CD Mode).
c. The head unit's power antenna lead is logic level output (+) 5V, negative trigger (grounding type), or cannot sustain (+) 12V when connected to other equipment in addition to the vehicle's power antenna. If any of the above conditions exist, the remote turn-on lead of your MRV-1000/MRV-T500/MRV-T300 must be connected to a switched power source (ignition) in the vehicle. Be sure to use a 3A fuse as close as possible to this ignition tap. Using this connection method, the MRV-1000/MRV-T500/MRV-T300 will turn on and stay on as long as the ignition switch is on.

If this is objectionable, a SPST (Single Pole, Single Throw) switch, in addition to the 3A fuse mentioned above, may be installed in-line on the MRV-1000/MRV-T500/MRV-T300 turn-on lead. This switch will then be used to turn on (and off) the MRV-1000/MRV-T500/MRV-T300. Therefore, the switch should be mounted so that is accessible by the driver. Make sure the switch is turned off when the vehicle is not running. Otherwise, the amplifier will remain on and drain the battery.
① Blue/White
② Power Antenna
③ Remote Turn-On Lead
④ To other Alpine components' Remote Turn-On Leads
⑤ SPST Switch (optional)
⑥ Fuse (3A)
⑦ As close as possible to the vehicle's ignition tap
⑧ Ignition Source

Adjustment Procedures

(1) Connections

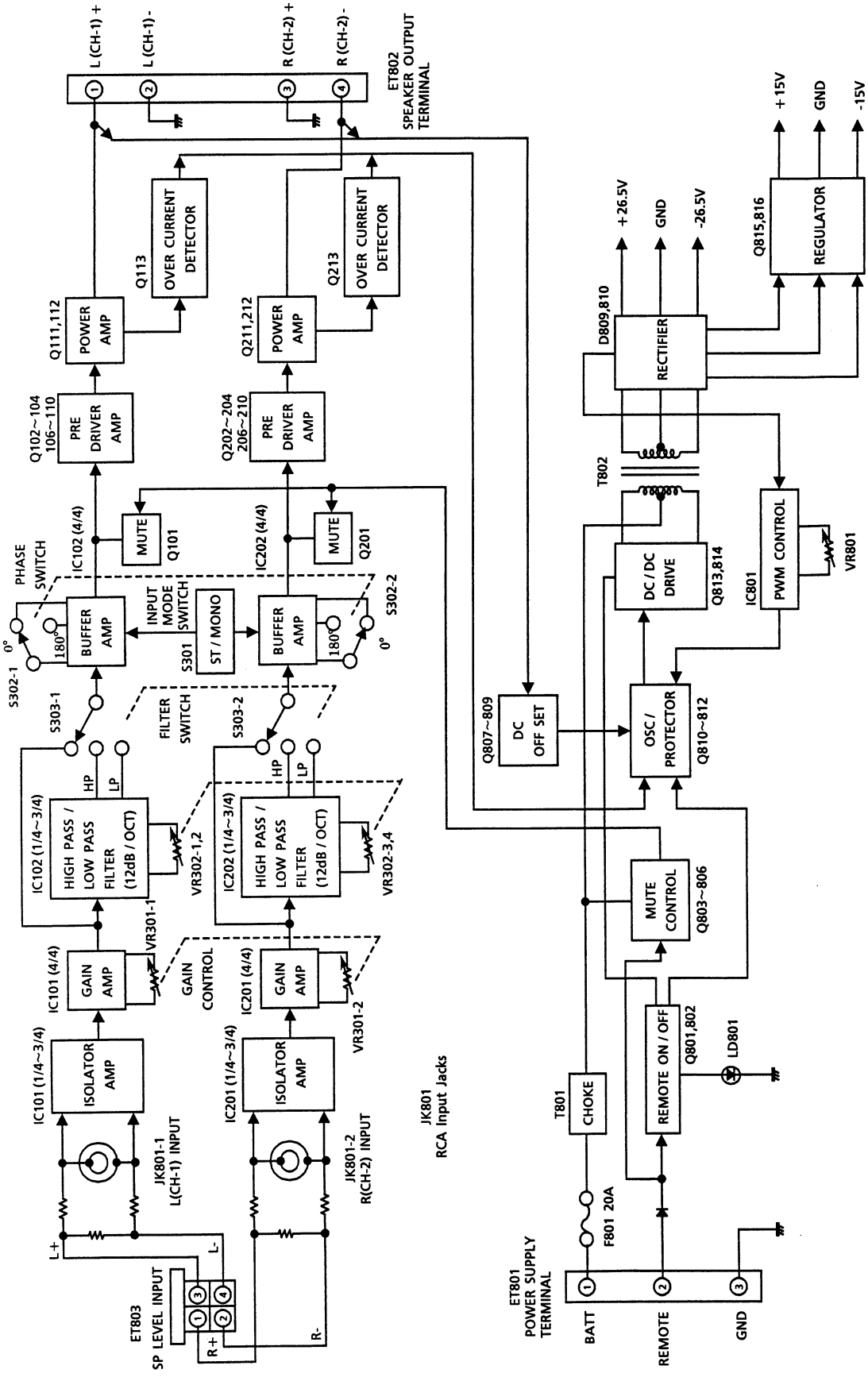


(2) Adjustment Procedures

Description	Test Point	Adjustment
Secondary rectifier Voltage Adjustment 二次側整流電圧調整	T.P.1 T.P.2	Adjust VR801 for 52±0.5V between T.P.1 and T.P.2. T.P.1 , T.P.2 間の電圧が 52±0.5V になる様に VR801 を調整する。

Note : For the Adjustment Parts (VR801) and Test Points,
refer to the Parts Layout on P.C.Boards and Wiring Diagram.
※ テストポイント及び調整部品(VR801)の詳細については、
「Parts Layout on P.C.Boards and Wiring Diagram」を参照願います。

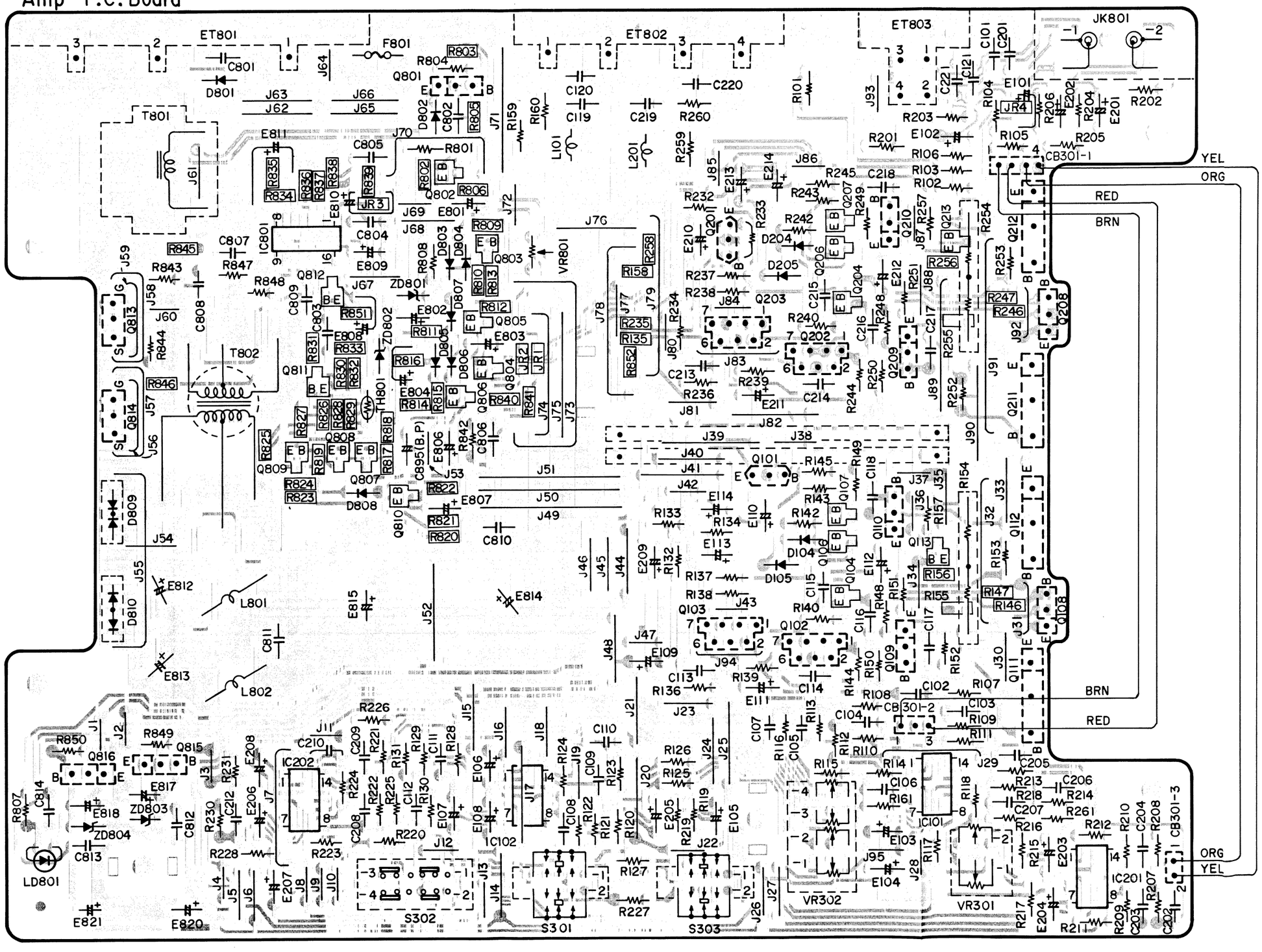
Block Diagram



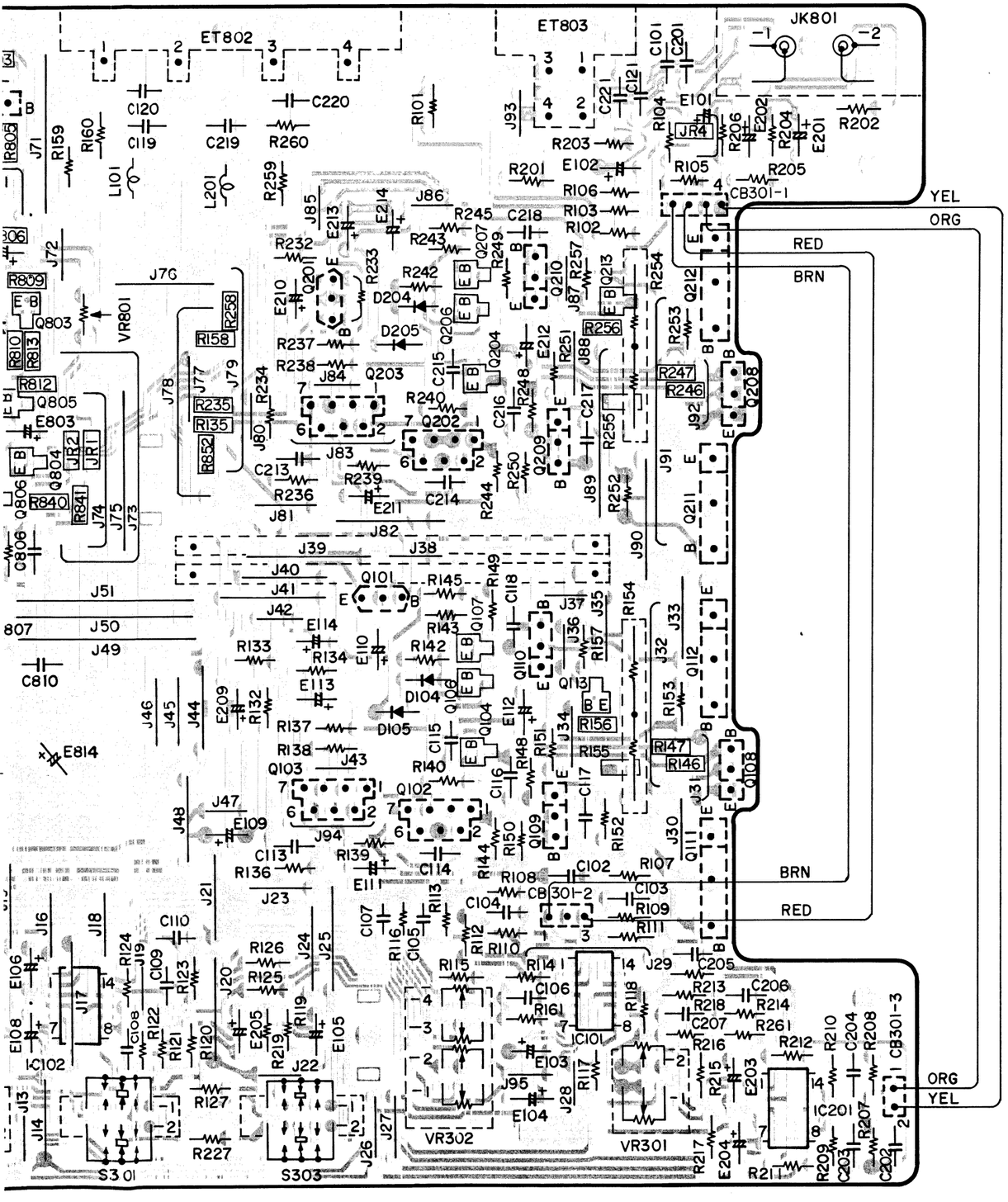
Parts Layout on P.C.Board and Wiring Diagram

P.C.Board viewed from soldered side.

Amp P.C.Board



P.C.Board viewed from soldered side.



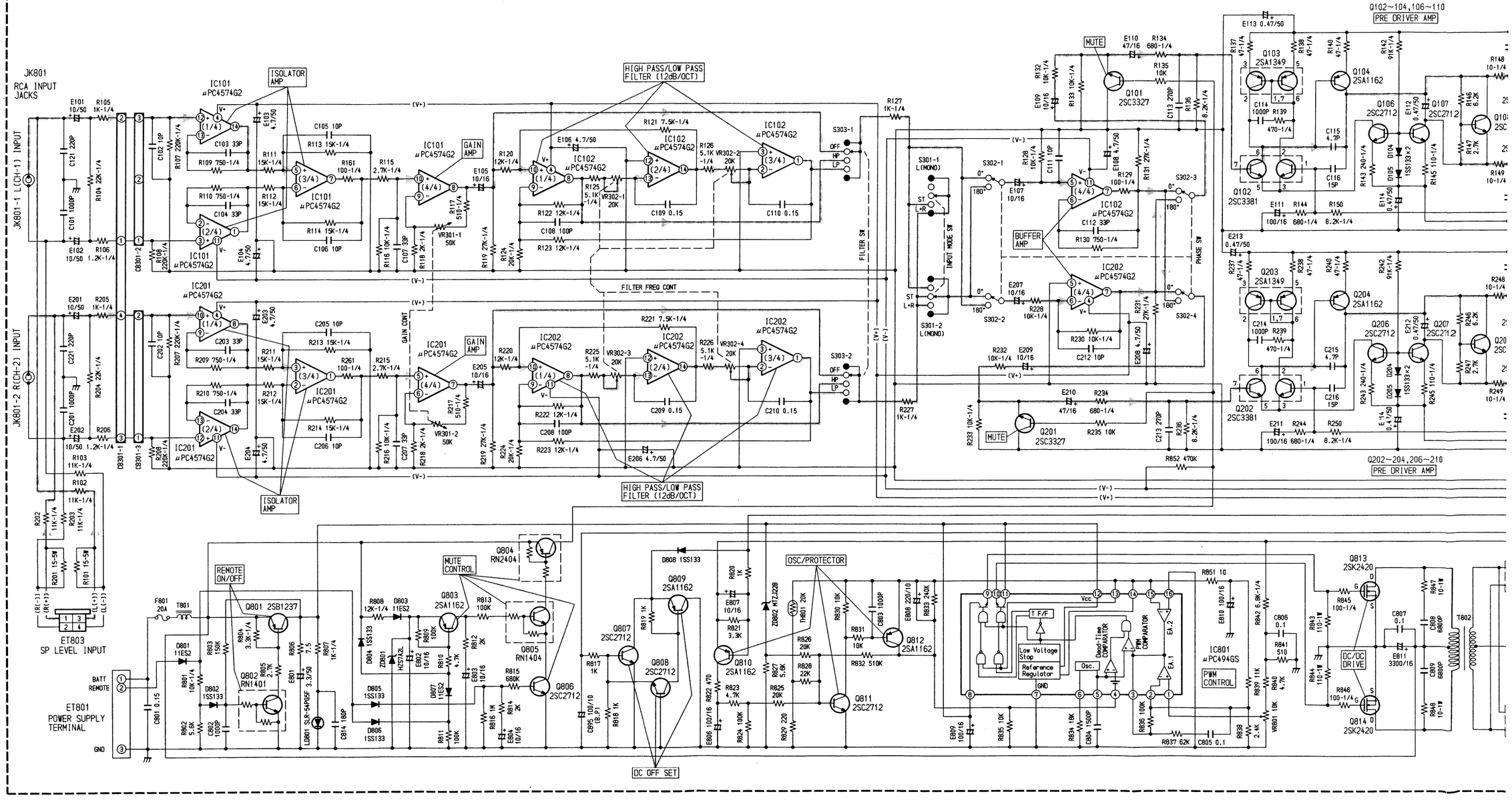
Blue Pattern : Foil Side Pattern

MRV-T300 MRV-T300

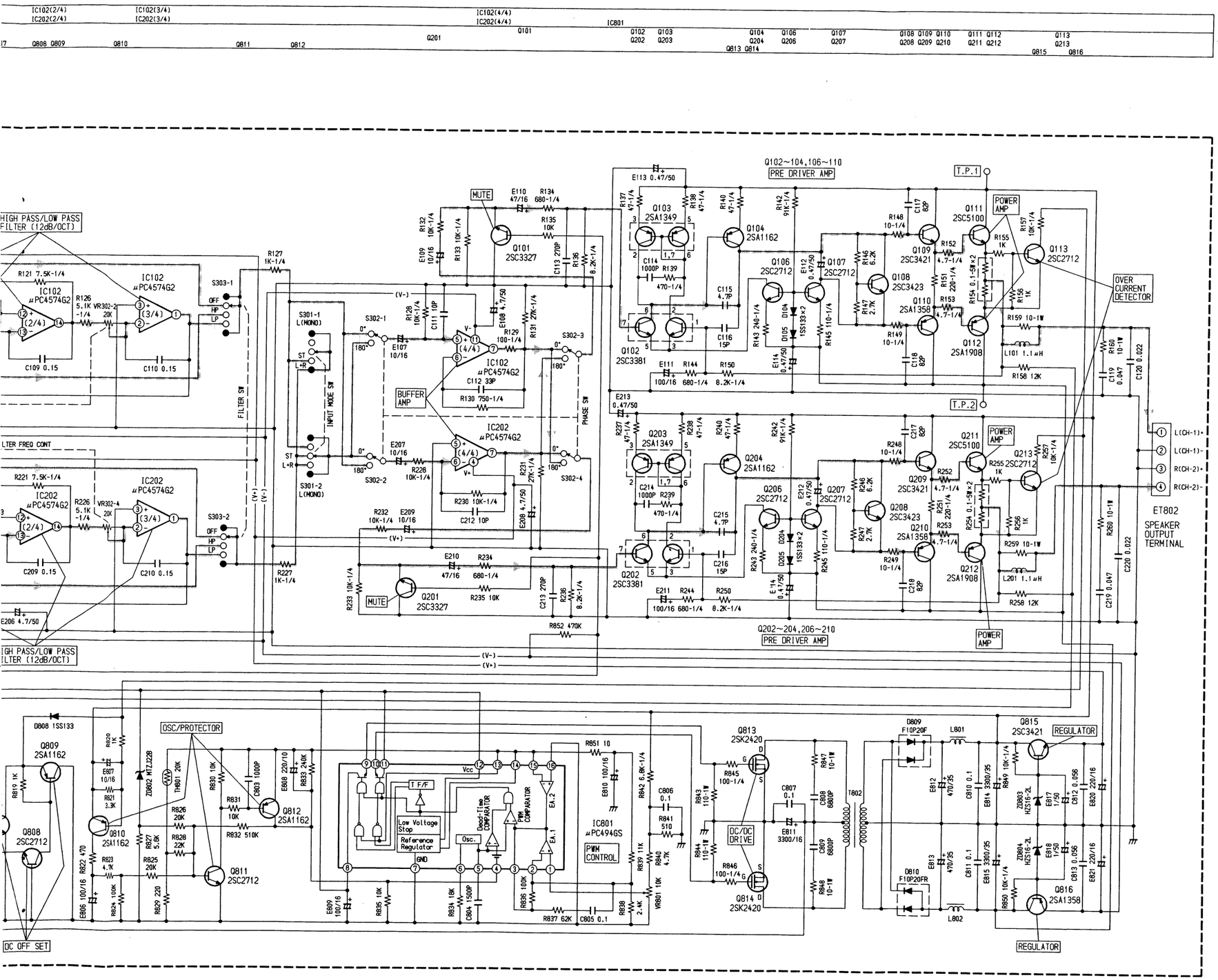
Schematic Diagram

IC		IC101(1/4)(2/4) IC201(1/4)(2/4)	IC101(3/4) IC201(3/4)	IC101(4/4) IC201(4/4)	IC102(1/4) IC202(1/4)	IC102(2/4) IC202(2/4)	IC102(3/4) IC202(3/4)	IC102(4/4) IC202(4/4)	IC801	
Transistor (Q)	Q801 Q802	Q803	Q804 Q805 Q806	Q807	Q808 Q809	Q810	Q811	Q812	Q201	Q101	Q102 Q103 Q202 Q203	Q104 Q106 Q107 Q204 Q206 Q207	Q813 Q814	Q10 Q20

Amp P.C.Board



NOTES:
1. All resistance values are in ohms. K= 1,000
2. All capacitance values are in microfarads. P= 1/1,000,000



IC101

1	0V	9	0V
2	0V	10	0V
3	0V	11	15.4V
4	-15.4V	12	0V
5	0V	13	0V
6	0V	14	0V
7	0V		
8	0V		

IC102

1	0V	9	0V
2	0V	10	0V
3	0V	11	15.4V
4	-15.4V	12	0V
5	0V	13	0V
6	0V	14	0V
7	0V		
8	0V		

IC201

1	0V	9	0V
2	0V	10	0V
3	0V	11	15.4V
4	-15.4V	12	0V
5	0V	13	0V
6	0V	14	0V
7	0V		
8	0V		

IC202

1	0V	9	0V
2	0V	10	0V
3	0V	11	15.4V
4	-15.4V	12	0V
5	0V	13	0V
6	0V	14	0V
7	0V		
8	0V		

IC801

1	0.96V	9	0.89V
2	0.96V	10	0.89V
3	3.75V	11	14.35V
4	0.2V	12	14.35V
5	1.73V	13	5.1V
6	3.8V	14	5.1V
7	0V	15	5.1V
8	14.35V	16	0V

	E	C	B	MODE
Q101	0V / 0V	0V / 0V	-14.7V / 0.6V	MUTE OFF / ON
Q104	26.4V	1.12V	25.8V	
Q106	-26V	-0.6V	-25.4V	
Q107	-26V	-1.1V	-25.4V	
Q108	-1.1V	1.1V	-0.5V	
Q109	0.55V	26.5V	1.1V	
Q110	-0.56V	-26.5V	-1.1V	
Q111	3mV	26.5V	0.53V	
Q112	-3mV	26.5V	-0.55V	
Q113	0V	26.5V	0V	
Q201	0V / 0V	0V / 0V	-14.7V / 0.6V	MUTE OFF / ON
Q204	26.4V	1.12V	25.8V	
Q206	-26V	-0.6V	-25.4V	
Q207	-26V	-1.1V	-25.4V	
Q208	-1.1V	1.1V	-0.5V	
Q209	0.55V	26.5V	1.1V	
Q210	-0.56V	-26.5V	-1.1V	
Q211	3mV	26.5V	0.53V	
Q212	-3mV	26.5V	-0.55V	
Q213	0V	26.5V	0V	
Q801	14.37V	14.36V	13.66V	
Q802	0V	45mV	2.9V	
Q803	6.61V / 6.62V	13mV / 6.6V	6.55V / 6V	MUTE OFF / ON
Q804	14.37V / 14.4V	14.8V / -0.46V	13.9V / 14.3V	MUTE OFF / ON
Q805	12mV / 6.5V	14.3V / 14.3V	15mV / 6.54V	MUTE OFF / ON
Q806	0V / 0V	12mV / 6.49V	0.56V / -0.74V	MUTE OFF / ON
Q807	0V	26V	0V	
Q808	0V	26V	0V	
Q809	26.1V	0V	26.1V	
Q810	26.5V	0V	26.5V	
Q811	0V	5V	0V	
Q812	5V	0.2V	5V	
Q815	15.4V	26.5V	16V	
Q816	-15.4V	-26.5V	-16V	

	S	D	G
Q813	0V	14.35V	0.9V
Q814	0V	14.35V	0.9V

	1	2	3	4	5	6	7
Q102	26V	25.8V	26.6V	—	26.5V	26V	26V
Q103	0V	26V	-0.6V	—	-0.6V	25.8V	0V
Q202	26V	25.8V	26.6V	—	26.5V	26V	26V
Q203	0V	26V	-0.6V	—	-0.6V	25.8V	0V

Measuring Conditions

1. Power Supply Voltage : DC14.4V
2. Measuring Meter : Digital Multi Meter
3. Measuring Reference Point : Between Ground
4. Measuring Condition : No Signal Input

Electrical Parts List

Resistor : Carbon resistors under 1 / 4 watts are not mentioned in the parts list, please confirm them by schematic diagram.

Capacitor : μF=microfarads, pF=picofarads

Abbreviations

RES.=	Resistor	CAP.=	Capacitor
C.F.=	Carbon Film	ELY.=	Electrolytic
M.F.=	Metal Film	CER.=	Ceramic
M.O.=	Metal Oxide Film	MYL.=	Mylar
M.P.=	Metal Plate	TAN.=	Tantalum
TR.=	Transistor	POLY.=	Polystyrol
TRANS.=	Transformer	PP.=	Polypropylene
CP.=	Chip	PLT.=	Polyethylene
		PF.=	Polyester Film

AMP P. C. Board

IC's

Symbol No.	Part No.	Description
IC101	51E10409S01	μPC4574G2
IC102	51E10409S01	μPC4574G2
IC201	51E10409S01	μPC4574G2
IC202	51E10409S01	μPC4574G2
IC801	51E11412S01	μPC494GS

Transistors

Symbol No.	Part No.	Description
Q101	48E21466S01	2SC3327
Q102	48E22011S01	2SC3381
Q103	48E22010S01	2SA1349
Q104	48T55491W03	CP., 2SA1162
Q106	48E20148S01	CP., 2SC2712
Q107	48E20148S01	CP., 2SC2712
Q108	48T64376F03	2SC3423
Q109	48T69176F02	2SC3421
Q110	48T70761F01	2SA1358
Q111	48E22012S01	2SC5100
Q112	48E22013S01	2SA1908
Q113	48E20148S01	CP., 2SC2712
Q201	48E21466S01	2SC3327
Q202	48E22011S01	2SC3381
Q203	48E22010S01	2SA1349
Q204	48T55491W03	CP., 2SA1162
Q206	48E20148S01	CP., 2SC2712
Q207	48E20148S01	CP., 2SC2712
Q208	48T64376F03	2SC3423
Q209	48T69176F02	2SC3421
Q210	48T70761F01	2SA1358
Q211	48E22012S01	2SC5100
Q212	48E22013S01	2SA1908
Q213	48E20148S01	CP., 2SC2712
Q801	48E21999S01	2SB1237
Q802	48E20144S01	CP., RN1401
Q803	48T55491W03	CP., 2SA1162
Q804	48E20184S01	CP., RN2404
Q805	48E07111S02	CP., RN1404
Q806	48E20148S01	CP., 2SC2712
Q807	48E20148S01	CP., 2SC2712
Q808	48E20148S01	CP., 2SC2712
Q809	48T55491W03	CP., 2SA1162
Q810	48T55491W03	CP., 2SA1162
Q811	48E20148S01	CP., 2SC2712
Q812	48T55491W03	CP., 2SA1162
Q813	48E22014S01	FET, 2SK2420
Q814	48E22014S01	FET, 2SK2420
Q815	48T69176F02	2SC3421
Q816	48T70761F01	2SA1358

Diodes

Symbol No.	Part No.	Description
D104	48T68829F01	1SS133
D105	48T68829F01	1SS133
D204	48T68829F01	1SS133
D205	48T68829F01	1SS133
D801	48T84052F11	11ES2
D802	48T68829F01	1SS133
D803	48T84052F11	11ES2
D804	48T68829F01	1SS133
D805	48T68829F01	1SS133
D806	48T68829F01	1SS133
D807	48T84052F01	11ES2
D808	48T68829F01	1SS133
D809	48E09190S01	F10P20F
D810	48E09190S02	F10P20FR
ZD801	48T25766W11	Zener, HZS7A2L
ZD802	48T45012W71	Zener, MTZJ22B
ZD803	48T83128F50	Zener, HZS16-2L
ZD804	48T83128F50	Zener, HZS16-2L

Thermistor / LED

Symbol No.	Part No.	Description
TH801	48E11405S01	20K ohm
LD801	65E22015S01	LED, SLR-54PG5F (GRN)

Symbol No.	Part No.	Description
Transformers		
T801	25E11580S01	Choke
T802	25E22004S01	Power
Coils		
L101	24E06338S01	1.1μH
L201	24E06338S01	1.1μH
L801	24E22005S01	Choke
L802	24E22005S01	Choke
Switches		
S301	40E22009S01	Slide, SSSF12 (INPUT MODE)
S302	40E09137S01	Slide, SSSF14 (PHASE)
S303	40E22009S01	Slide, SSSF12 (FILTER)
Capacitors		
C101	08E21991S01	CER., 1000pF
E101	23E21187S01	ELY., 10μF / 50V
C102	08E21992S01	CER., 10pF
E102	23E21187S01	ELY., 10μF / 50V
C103	08E21987S01	CER., 33pF
E103	23E21995S01	ELY., 4.7μF / 50V
C104	08E21987S01	CER., 33pF
E104	23E21995S01	ELY., 4.7μF / 50V
C105	08E21992S01	CER., 10pF
E105	23E20773S01	ELY., 10μF / 16V
C106	08E21992S01	CER., 10pF
E106	23E21995S01	ELY., 4.7μF / 50V
C107	08E21987S01	CER., 33pF
E107	23E20773S01	ELY., 10μF / 16V
C108	21E06640S01	CER., 100pF
E108	23E21995S01	ELY., 4.7μF / 50V
C109	08E09008S09	PF., 0.15μF
E109	23E20773S01	ELY., 10μF / 16V
C110	08E09008S09	PF., 0.15μF
E110	23E21149S01	ELY., 47μF / 16V
C111	08E21992S01	CER., 10pF
E111	23E20774S01	ELY., 100μF / 16V
C112	08E21987S01	CER., 33pF
E112	23E21460S01	ELY., 0.47μF / 50V
C113	08E04860S02	CER., 270pF

Symbol No.	Part No.	Description
E113	23E21460S01	ELY., 0.47μF / 50V
C114	08E21991S01	CER., 1000pF
E114	23E21460S01	ELY., 0.47μF / 50V
C115	08E21993S01	CER., 4.7pF
C116	21E07286S03	CER., 15pF
C117	08E21989S01	CER., 82pF
C118	08E21989S01	CER., 82pF
C119	08E09008S14	PF., 0.047μF
C120	08E09151S03	PF., 0.022μF
C121	08E21463S01	CER., 220pF
C201	08E21991S01	CER., 1000pF
E201	23E21187S01	ELY., 10μF / 50V
C202	08E21992S01	CER., 10pF
E202	23E21187S01	ELY., 10μF / 50V
C203	08E21987S01	CER., 33pF
E203	23E21995S01	ELY., 4.7μF / 50V
C204	08E21987S01	CER., 33pF
E204	23E21995S01	ELY., 4.7μF / 50V
C205	08E21992S01	CER., 10pF
E205	23E20773S01	ELY., 10μF / 16V
C206	08E21992S01	CER., 10pF
E206	23E21995S01	ELY., 4.7μF / 50V
C207	08E21987S01	CER., 33pF
E207	23E20773S01	ELY., 10μF / 16V
C208	21E06640S01	CER., 100pF
E208	23E21995S01	ELY., 4.7μF / 50V
C209	08E09008S09	PF., 0.15μF
E209	23E20773S01	ELY., 10μF / 16V
C210	08E09008S09	PF., 0.15μF
E210	23E21149S01	ELY., 47μF / 16V
E211	23E20774S01	ELY., 100μF / 16V
C212	08E21992S01	CER., 10pF
E212	23E21460S01	ELY., 0.47μF / 50V
C213	08E04860S02	CER., 270pF
E213	23E21460S01	ELY., 0.47μF / 50V
C214	08E21991S01	CER., 1000pF
E214	23E21460S01	ELY., 0.47μF / 50V
C215	08E21993S01	CER., 4.7pF
C216	21E07286S03	CER., 15pF
C217	08E21989S01	CER., 82pF
C218	08E21989S01	CER., 82pF
C219	08E09008S14	PF., 0.047μF
C220	08E09151S03	PF., 0.022μF
C221	08E21463S01	CER., 220pF
C801	08E09008S09	PF., 0.15μF
E801	23E21994S01	ELY., 3.3μF / 50V
C802	08E21991S01	CER., 1000pF
E802	23E20773S01	ELY., 10μF / 16V
C803	08E21991S01	CER., 1000pF
E803	23E20773S01	ELY., 10μF / 16V
C804	08E20778S01	PF., 1500pF

Symbol No.	Part No.	Description
E804	23E20773S01	ELY., 10μF / 16V
C805	08E09008S06	PF., 0.1μF
C806	08E09008S06	PF., 0.1μF
E806	23E20774S01	ELY., 100μF / 16V
C807	08E09008S06	PF., 0.1μF
E807	23E20773S01	ELY., 10μF / 16V
C808	08E09151S07	PF., 6800pF
E808	23E20800S01	ELY., 220μF / 10V
C809	08E09151S07	PF., 6800pF
E809	23E20774S01	ELY., 100μF / 16V
C810	08E09008S06	PF., 0.1μF
E810	23E20774S01	ELY., 100μF / 16V
C811	08E09008S06	PF., 0.1μF
E811	23E22001S01	ELY., 3300μF / 16V
C812	08E09008S01	PF., 0.056μF
E812	23E22003S01	ELY., 470μF / 35V
C813	08E09008S01	PF., 0.056μF
E813	23E22003S01	ELY., 470μF / 35V
C814	08E21990S01	CER., 180pF
E814	23E22002S01	ELY., 3300μF / 35V
E815	23E22002S01	ELY., 3300μF / 35V
E817	23E20776S01	ELY., 1μF / 50V
E818	23E20776S01	ELY., 1μF / 50V
E820	23E21996S01	ELY., 220μF / 16V
E821	23E21996S01	ELY., 220μF / 16V
C895	23E21997S01	ELY., (B.P) 100μF / 10V

Resistors (All resistors are chip 1/10W±5% unless otherwise noted.)

R101	06E22018S01	Plate, 15 ohm 5W
R111	06E21984S01	M.F., 15K ohm 1/4W
R112	06E21984S01	M.F., 15K ohm 1/4W
R113	06E21984S01	M.F., 15K ohm 1/4W
R114	06E21984S01	M.F., 15K ohm 1/4W
R135	06E08433S10	10K ohm
R146	06E21983S01	6.2K ohm
R147	06E21982S01	2.7K ohm
R154	17E09460S01	Plate, 0.1 ohm 5W×2
R155	06E08433S03	1K ohm
R156	06E08433S03	1K ohm
R158	06E08433S45	12K ohm
R159	06E21985S01	M.F., 10 ohm 1W
R160	06E21985S01	M.F., 10 ohm 1W
R201	06E22018S01	Plate, 15 ohm 5W
R211	06E21984S01	M.F., 15K ohm 1/4W
R212	06E21984S01	M.F., 15K ohm 1/4W
R213	06E21984S01	M.F., 15K ohm 1/4W
R214	06E21984S01	M.F., 15K ohm 1/4W
R235	06E08433S10	10K ohm

Symbol No.	Part No.	Description
R246	06E21983S01	6.2K ohm
R247	06E21982S01	2.7K ohm
R254	17E09460S01	Plate, 0.1 ohm 5W×2
R255	06E08433S03	1K ohm
R256	06E08433S03	1K ohm
R258	06E08433S45	12K ohm
R259	06E21985S01	M.F., 10 ohm 1W
R260	06E21985S01	M.F., 10 ohm 1W
R802	06E08433S25	5.6K ohm
R803	06E08433S14	150K ohm
R805	06E08433S06	2.7K ohm
R806	06E21981S01	7.5 ohm
R809	06E08433S29	100K ohm
R810	06E08433S07	4.7K ohm
R811	06E08433S29	100K ohm
R812	06E08433S44	2K ohm
R813	06E08433S29	100K ohm
R814	06E08433S44	2K ohm
R815	06E08433S55	680K ohm
R816	06E20117S01	1M ohm
R817	06E08433S03	1K ohm
R818	06E08433S03	1K ohm
R819	06E08433S03	1K ohm
R820	06E08433S03	1K ohm
R821	06E08433S21	3.3K ohm
R822	06E20498S01	470 ohm
R823	06E08433S07	4.7K ohm
R824	06E08433S29	100K ohm
R825	06E08433S65	20K ohm
R826	06E08433S65	20K ohm
R827	06E08433S25	5.6K ohm
R828	06E08433S12	22K ohm
R829	06E08433S26	220 ohm
R830	06E08433S10	10K ohm
R831	06E08433S10	10K ohm
R832	06E08433S74	510K ohm
R833	06E21980S01	240K ohm
R834	06E08433S11	18K ohm
R835	06E08433S10	10K ohm
R836	06E08433S29	100K ohm
R837	06E08433S73	62K ohm
R838	06E08433S16	2.4K ohm
R839	06E08433S51	11K ohm
R840	06E08433S07	4.7K ohm
R841	06E08433S69	510 ohm
R843	06E21986S01	M.F., 110 ohm 1W
R844	06E21986S01	M.F., 110 ohm 1W
R845	06E07326S04	100 ohm 1/4W
R846	06E07326S04	100 ohm 1/4W
R847	06E21985S01	M.F., 10 ohm 1W
R848	06E21985S01	M.F., 10 ohm 1W
R851	06E08433S01	10 ohm

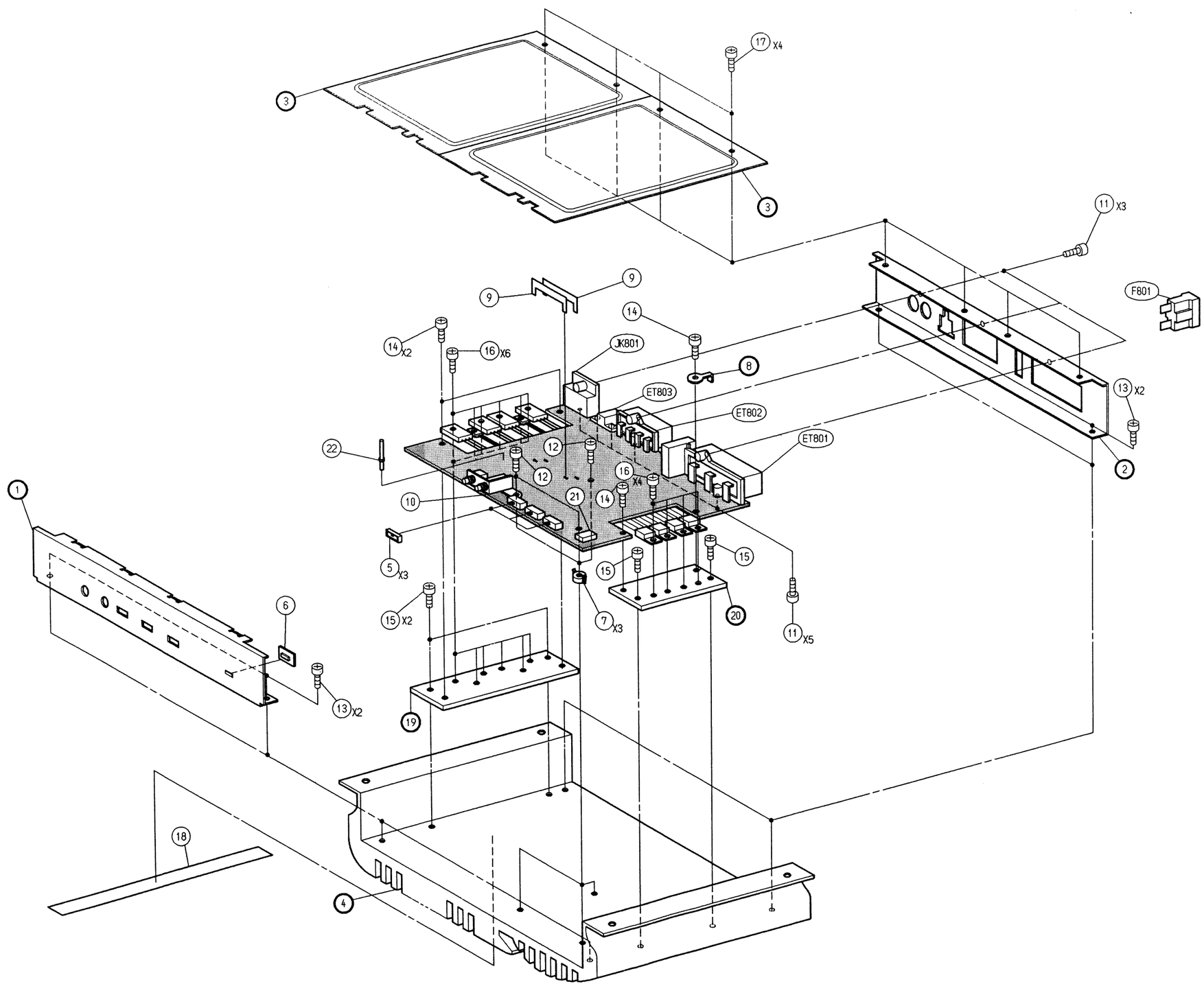
Symbol No.	Part No.	Description
R852	06E08433S43	470K ohm
VR301	18E22017S01	Volume, 50K ohm×2 (GAIN)
VR302	18E22016S01	Volume, 20K ohm×4 (FILTER FREQUENCY)
VR801	18E21381S01	Variable, 10K ohm
Miscellaneous		
ET801	29T00471K01	Power Supply Terminal
ET802	01E22006S01	Speaker Output Terminal
ET803	09E08839S01	SP Level Input
F801	65S58596F06	Fuse, Auto 20A (For Battery Line)
JK801	01E22007S01	RCA Input Jacks

Cabinet Assembly Parts List

Note : No parts number on parts list are not supplied.

Symbol No.	Index	Part No.	Description
5	3-C	15E21973S01	Cover, Switch
6	4-C	61E22364S01	Lens, LED
7	4-D	43E21451S01	Support P.C.Board
9		07E11583S01	Bus, Bar (F)
10	3-C	07E22365S01	Bracket, Volume
11		03E11616S01	Screw, Pan(M3×10)
12	3-D	03E07234S02	Screw, Bind(M3×12)
13		03E22345S01	Screw, Bind(M3×5)
14		03E08429S02	Screw, Bind(M3×6)
15		03E06967S01	Screw, Bind(M3×10)
16		03E22346S01	Screw, W/Double Washer (M3×8.5)
17	1-E	03E22347S01	Screw, Special (M3×5)
18	5-B	45E22366S01	Name Plate
21	3-D	43E21974S01	Spacer
22	3-C	46E22367S01	Pin, Lead

Exploded View (Cabinet)



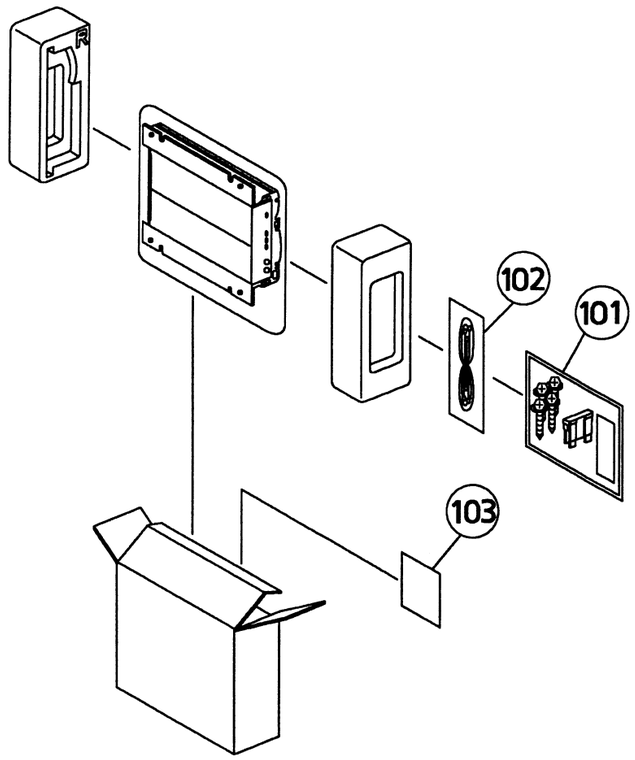
Packing Assembly Parts List

Symbol No.		Part No.	Description
	101-1	03E22368S01	Screw, Tapping (M4×14)
	101-2	15A81064F01	Housing, Rubber (A)
	101-3	65S58596F06	Fuse, Auto 20A
	102-1	01E21977S01	Assy., SP. Input Wire
△	102-2	01E21979S01	Assy., Power Supply Wire
□	102-2	01E21979S01	Assy., Power Supply Wire
△	102-3	01E21976S01	Assy., Remote Wire
□	102-3	01E21976S01	Assy., Remote Wire
□	102-4	01E21978S01	Assy., Speaker Wire
○	103-1	68P61487W51	Owner's Manual
△	103-1	68P61487W51	Owner's Manual
□	103-1	68P61487W50	Owner's Manual
△	103-2	68P61487W52	Owner's Manual (I / G / S)

Symbol No.	Part No.	Description

Notes : ○ : For North American Model Only,
□ : For Japanese Model Only,
△ : For General Foreign Model Only,
Others : Common.

Packing Method View



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